

**City of Detroit  
Department of Transportation**

**Service Standards  
Fiscal Year 2014-2015**



**Performance Measurements  
Service Quality and Systems Management  
October 2014**

# FOREWORD

This published document presents the 2014 update of the Detroit Department of Transportation Service Standards. These Standards have evolved over time and seek to improve the previous Standards that govern DDOT's service delivery policy and the service planning process.

DDOT is a dedicated world-class transit system built upon customer service excellence, accessibility, reliability, safety, security, state-of-the-art technology, and is a diverse workforce that reflects our commitment to the regional communities we plan to serve.

The genesis of this current document is the executor of DDOT's executive responsibilities taken from the mission, goals and financial mandates for Fiscal Year 2014-2015. All is based on an indepth analysis that examines the service standards and service planning methods used in the public transportation industry. The intent of this document is to perfect DDOT's performance by implementing best-practice techniques for planning and evaluating services.

Adherence to the Service Standards will ensure that DDOT provides quality transit services that meet the needs of the riding public locally, regionally and that are consistent with all enabling legislation and federal mandates, such as Title VI of the Civil Rights Act of 1964, by:

- Establishing Service Objectives that define the key performance characteristics of quality transit services;
- Identifying quantifiable Service Standards used to measure whether or not the DDOT transit services achieve the Service Objectives and to evaluate whether DDOT services are provided in an equitable manner (as defined by Title VI);
- Outlining a Service Planning Process that applies the Service Standards in an objective, uniform, and efficient manner; and
- Involving the public with the guidance of the Southeast Michigan RTA in the Service Planning Process in a consistent, equitable and effective manner.
- Environmental Justice; Proposed Circular
- Service and Fare Equity analysis and Impact Determination

The 2014 Service Standards engages the timely updates necessary and appropriate after the previous years' experience with implementation. In particular, as new technologies enhance DDOT's ability to collect and analyze data are perfected; policy modifications may be needed to restructure the use of this information for service planning purposes.

This publication of DDOT's Service Standards is a working document based on instilling efficient methods that benefit the common good of the public and the transit communities.

# **Detroit Department of Transportation 2014 Service Standards**

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## **EXECUTIVE SUMMARY**

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The Detroit Department of Transportation (DDOT) Service Standards provides criterion to support its mission:

***“The mission of the Detroit Department of Transportation is to provide public transit services that are reliable, clean, customer-focused, safe and secure.”***

The demographic structure within the DDOT service region is diverse and constantly changing. Given these changes, it has become necessary to develop baseline standards that will assist in operation of the largest transit carrier in the state of Michigan. Adoption of Service Standards will allow us to maintain a consistent and continual evaluation of services.

The objective of these standards will permit DDOT to provide continual analysis of the effectiveness of the service being provided to the public. Adherence to these standards ensures ongoing quality and system integrity.

### **DDOT Planning for the Future**

Many of the standards outlined in this document are objectives included in DDOT’s goals and strategic initiatives. This connection reflects DDOT’s commitment to the public to ensure the consistent delivery of quality service. DDOT buses operate from the Central Business District’s Rosa Parks Transit Center at the corner of Michigan and Cass. DDOT has improved its strategic planning process to include long-term operating, rail and capital plans. The plans focus on affordable, efficient, clean, reliable, safe and customer- focused transit services. DDOT’s goal to regionally diversify transit service includes rapid transit and express service linking downtown, Metro Airport, Oakland and Somerset Malls, Great Lakes Crossing, New Center neighborhoods and regional points serving the four metro counties. Additionally, a transit policing program

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is in operation which is providing safety and security to transit riders. Lastly, DDOT seeks to improve its public image and become the preferred transit choice in the region.

## **Bus Service Delivery Standards**

**Bus Headway** is defined as the interval of time between buses traveling in any given direction (inbound or outbound) on any given route. Weekday morning and evening peak periods will maintain headway of 45 minutes or less. Weekday off-peak and weekend service will maintain headway of no greater than 75 minutes. The off-peak standard will also apply to weekday services that maintain the same frequency during peak and off-peak periods as dictated by passenger demand.

**Bus Load Factor** is defined as the ratio of passengers on board a bus to the number of seats available. The targeted load factor for traditional bus service is 1.25 with a maximum of 1.50 during peak period service, or 1.00 in the off-peak and weekend service. Any service operating 10 or more miles per trip on limited access highways and all small vehicle service will maintain a 1.00 load factor not to exceed 1.25. Service that exceeds 1.50 (1.25 for service operating 10 or more miles per trip or limited access highways and all small vehicle service) will be investigated for possible modification.

**Route Productivity** is based on current ridership information and the performance measures of 1) Average passengers per revenue hour and 2) Average cost per passenger, to determine productivity by route during weekday, Saturday, and Sunday service. The results will be compared against similar service types based on the evaluation methodology outlined in the service evaluation and modification process.

**Bus Stop Spacing Criteria** efficient bus stop placement will optimize service delivery while minimizing the required walking distance between routes. The areas evaluated for these standards include: 1) bus stop spacing, 2) special consideration-destination, 3) sidewalk availability, 4) safety and convenience, and 5) schedule adherence.

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**Span of Service Hours** is defined as the hours that service will operate at any given point within the system. Bus service generally operates for a minimum of 15 hours per weekday. The span of service varies by route according to demand and may be limited to peak hour service only while other services are on a special requirement basis.

**Bus Distribution** will be equitable throughout the system at the terminal level between garages and during daily vehicle assignment. Factors that will be considered include fuel economy by garages, peak vehicle requirement by division and maintenance capabilities by division.

**Transit Access** is defined as a measure of the distance a person must travel to gain access to transit service. The distance is measured as walking distance rather than “air distance” to better represent a person’s ability to access the system. Bus services will have a maximum of ¼ mile walking distance. Bus route spacing will occur at half mile intervals. Standards may be waived or reduced depending on density.

## **Transit Amenities**

**Bus Shelter Placement** will be determined systematically with the use of automatic passenger counter data or point check data if necessary. The stops with the highest (number of boarding’s 75 or more) activity are prioritized and identified as potential candidates. Other factors considered include: 1) Customer Service input, 2) equitable distribution with some internal constraints, 3) physical layout of identified location, and 4) compliance with local jurisdiction management. Transfer points will receive consideration for shelter placement even if below boarding criterion.



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**Bus Amenities** are primarily identified as amenities that are vehicle-specific including clean fuel, air conditioning, heating, kneeling capabilities, wheelchair ramps/lifts and possible bike racks.

**Paratransit Service** is available for persons with disabilities who are unable to negotiate the DDOT fixed route system. Passengers must be certified as eligible with special fares through a two-part application process (client and doctor). Trips can be delivered curb-to-curb within a  $\frac{3}{4}$  mile of DDOT fixed route service encompassing the DDOT service area. Service will be measured by monitoring (1) on-time performance, (2) customer complaints per 10,000 passengers, (3) accidents per 100,000 miles, (4) passenger miles, and passenger hour.

**Special Events** are considered as occasions that take place infrequently and are not a part of the annual work plan. Examples of this type of service include: Grand Prix, Super Bowl, All-Star Game, etc.

**Seasonal Routes** are routes that operate on a seasonal schedule only. These services occur on a regular, annual basis and can be anticipated in the service planning process. Examples of this type of service include: Tiger Shuttles, Lions Shuttle Services, Auto Show, Thanksgiving Parade and any other annual event where special supplemental service is assigned.

**Service Monitoring and Ridership Data Reporting** is performed by DDOT's Data Collection and Service Monitoring Unit. This unit collects data that is available through the following sources: automatic passenger counters (APC), manual ride checks, manual point checks, and GFI fare collection reports. This data will be continuously collected and summarized on a quarterly basis for assessment.

Comprehensive reports will occur semi-annually and identify those routes that are failing based on the service standards, in addition to routes that are declining and need further

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evaluation. A report of these results will be produced within 30 days of the six-month reporting period.

**Integration of Bicycles and Transit Policy** - This integration of Bicycles and Transit Policy presents the first formalized presentation of the Detroit Department of Transportation Bicycles Service Policy Manual. These Bicycle Policies have evolved from the work of practitioners faced with problems in their day-to-day work. DDOT is committed in providing a systematic means for assembling and evaluating such useful information and to make it available to the entire transit community.

During the past decade, there has been significant growth in bicycles and transit integration. Transit agencies are increasingly mounting bicycles racks on buses; allowing bicycles to be brought on board trains, installing bicycle racks and lockers at transit stations, providing staffed bicycle parking facilities at major hubs, and offering other bicycles services.

There are many reasons for the growth in bicycles and transit integration. Transit agencies have found that bicycles services can provide the following benefits:

- Bicycling extends the catchment area for transit services and provides greater mobility to customers at the beginning and end of their trips.
- Bicycles-on-transit services provide bicycles with the option to take transit to avoid riding after dark, up hills, in poor weather, or in areas that do not provide

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comfortable bicycle access (e.g., bridges, tunnels, construction areas, and narrow roads with high traffic volumes). Bicycle-on-transit is also an option for bicyclists who have mechanical problems or need to get home in an emergency.

- Bicycle and transit integration is also thought to decrease automobile traffic congestion, help reduce air pollution (by reducing motor vehicle trips), and improve the public image on transit.

All of these benefits help communities reduce their reliance on single-occupants vehicle travel and make their transportation system work more efficiently.

Significant growth in bicycles and transit integration services began in the early 1990s. In 1991, the U. S. Congress passed the Intermodal Surface Transportation Efficiency Act (ISTEA). This legislation increased the amount of funding available for bicycle and pedestrian facilities and transit systems. ISTEA was followed in 1997 by the transportation Equity Act for the 21<sup>st</sup> Century (TEA21), which continued to support the development of multimodal Transportation systems. This federal legislation has helped to create funding for bicycles and transit programs, including bicycles projects, under the eligibility for both highway and transit projects.

## **Service Evaluation and Modification Process**

**Methodology:** A route will be determined as deficient if, for two consecutive quarters, its annual average passenger per revenue trip is 50% or less than the average for similar existing service and its annual average cost per passenger is 150% or greater

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than the average for similar existing service. These measures will be calculated separately for mainline, local, feeder, semi-express and small vehicle services (e.g., trolleys).

Following assessment and subsequent analysis, proposals will be submitted for consideration for service modification to increase productivity and efficiency for both the passengers and DDOT. If a route is found deficient and extenuating circumstances do not exist, a strategy will be developed which may include a schedule change and other corrective actions. The strategy to include targeted marketing will be evaluated for six months to permit new and existing passenger ridership patterns to develop. If implementation of the strategy fails to improve a route's performance, staff may create a new strategy, allowing an additional six months to establish improved ridership.

If reasonable measures do not result in the route meeting established standards within the scheduled time, staff will hold a public hearing to gather input regarding the proposed elimination of the route or route segment.

Factors affecting service modification implementation include (1) evaluation of budget availability for expected service modifications or additions; (2) evaluation of requested service changes including deletion, modification, or new service, and (3) results of the public involvement process.

**Service & Comfort Service Standard**

The public perception of comfort and the reality of public safety are influenced by the number of passengers on the vehicle and whether or not a seat is available to each rider for all or most of the trip. The Vehicle Load Standards, which vary by mode and time of day, establish the average maximum number of passengers allowed per vehicle to provide a safe and comfortable ride.

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**Vehicle Load**

As indicated in the frequency of Service Standards, the level of service provided by the Detroit Department of Transportation is primarily a function of the demand for that service, as demonstrated through the number of customers utilizing the service at different times during the day. On weekends and during some weekday time periods, most DDOT services operate with sufficient frequency to provide every passenger with a seat. However, during the heaviest weekday travel times or locations some passengers will need to stand.

During time periods when some passengers will be standing, the Detroit Department of Transportation will provide sufficient service so that vehicles are not excessively crowded. The purpose of the vehicle Load Standard is to define the levels of crowding that are acceptable by mode and time period. The time periods used by the Department of Transportation for all modes, for both the Frequency of Service and Vehicle Load Standards, are defined earlier in this chapter (see Frequency of Service Standards).

Because light rail is planned for the core areas and will be heavily used throughout the day, some standees can be expected during all time periods. For the purposes of this policy, the core area, as it relates to light rail vehicle Load Standard, is defined as follows:

**Table 1 DDOT Core Area Boundaries**

Light Rail Core Areas

Light Rail State Fair to Downtown Detroit

By mode and time period, the acceptable levels of crowing are shown in the following table. The load standards in the table are expressed as a ratio of the number of passengers on the vehicle to the number of seats o the vehicle. To determine whether

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a service has an acceptable level of crowding, the vehicle loads are averaged over specified periods of time. Due to scheduling constraints and peaking characteristics, some individual trips may exceed the load levels expressed in the standards.

For most modes the load standards shown represent average maximum loads over any time period on weekdays and over the whole day on weekends. For bus, on weekdays the loads cannot exceed the standard when averaged over any 30-minute segment of an Early AM, AM Peak, Midday School or PM Peak period, or any 60-minute segment of a Midday Base, Evening, Late Evening or Night/Sunrise period. On weekend days, the loads cannot exceed the standard when averaged over any 60-minute segment of the whole service day.

**Table 2: Vehicle Load Standards by Mode**

<b>Mode</b>	<b>Time Period</b>	<b>Passengers/ Seats</b>
<b>Bus*</b>		
	<u>Early AM, AM Peak, Midday School &amp; PM Peak</u>	150%
	Midday Base, Evening, Late Evening, Night/Sunrise & Weekends	
	<u>Surface portions of routes</u>	125%
	<u>Expressway portions of routes</u>	150%
<b>Light Rail</b>		
	<u>Early AM, AM Peak, Midday School &amp; PM Peak</u>	225%
	Midday Base, Evening, Late Evening, Night/Sunrise & Weekend	
	<u>Downtown Area</u>	225%
	<u>Stadium Area</u>	225%
<b>Commuter Rail</b>		
	Early AM, AM Peak, Midday School & PM Peak	110%

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Midday Base, Evening, Late Evening,  
Night/Sunrise & Weekends 100%

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\*For Bus, Light Rail, the vehicle Load Standard is based on the ratio of passengers to seating capacity at maximum load. For commuter Rail services, the load standard is based on the ratio of boarding passengers per vehicle to seated capacity. For the purpose of the Vehicle Load Standard, “Bus” encompasses all rubber-tired vehicles, including diesel. Bio-diesel, trackless trolley, etc.

Street Car is an electrically powered vehicle running regularly along certain streets, usually on rails. Usually shares part of Right –of-Way. Receives power through a Trolley pole or a pantograph. Commuter Rail (CR) a transit mode that is an electric or diesel propelled railway for urban passenger train service consisting of local short distance travel operating between a central city and adjacent suburbs. Service must be operated on a regular basis by or under contract with a transit operator for the purpose of transporting passengers within urbanized areas (UZAs), or between urbanized area and outlying areas. Light Rail (LR) typically is an electric railway with a light volume traffic capacity compared to heavy rail (HR). It is characterized by passenger rail cars operating singly (or in short, usually two car, trains) on fixed rails in shared or exclusive right-of-way (ROW), low or high platform loading, and vehicle power drawn from an overhead electric line via a trolley pole or a pantograph.

## **Public Hearing Requirements**

A public hearing will be held in accordance with the DDOT policies and FTA standards. The Detroit Department of Transportation (DDOT) will schedule public hearings as needed to solicit comments from its stakeholders at open forums. Public hearing schedules, notification and implementation shall follow the policies and procedures as indicated in this document.

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Public Hearings are required as follows:

- Prior to raising fares or implementing a major change in transit services. (Federal Transit Act. Section 9 (e) (3) (H)).
  
- If there is a change in service of 25% or more of the number of transit route miles of a route; or 25% or more of the number of transit revenue vehicles miles of a route computed on a daily basis for the day of the week for which the change is made.
  
- When a new transit route is established.
  
- Before eliminating an existing transit route.
  
- Prior to any application for a grant or loan under the Federal Transit Act to finance the acquisition, construction, reconstruction, or improvement of facilities or equipment which will substantially affect a community or its mass transportation service, DDOT shall afford an adequate opportunity for a public hearing, pursuant to adequate public notice, and hold such hearing unless no one with a significant economic, social, or environmental interest in the matter requests a hearing. (Federal Transit Act. Section 3 (d) (1))

Exemptions to the requirement are:

- If reduced or free promotional fares are instituted on a daily basis or periodically within a period of 180 days.
  
- If an emergency situation occurs, a service change may be implemented immediately. Examples of emergency service changes include but are not



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limited to those made because of a power failure for a fixed-guideway system, the collapse of a bridge over which bus routes pass, major road or rail construction or inadequate supplies of fuel, etc.

- Experimental service changes instituted for 180 days, or less.
- For headway adjustments of up to ten (10) minutes during peak hour service; and up to twenty (20) minutes during non-peak hour service.
- Standard seasonal variations are exempt unless the number, timing or types of standard seasonal variation change.

An accurate stenographic transcription or tape recording will be made of each public hearing. Public hearings will be held at facilities convenient to the affected customers and accessible to the disabled.

### **Monitoring of Approved Service Standards**

Funding for service is determined through the annual budget process, the Service Evaluation Process which includes the Service Standards. This assures that effective allocation of budgeted funds has occurred. All standards listed in this document will be monitored quarterly and reported on a semi-annual basis. A semi-annual report will be prepared and submitted to the director for review. Upon approval, the report will be available upon request from the Strategic Planning and Scheduling Division.

The Service Standards provide a framework for measuring the performance of DDOT services and are used as a part of the Service Evaluation Process. Through the Service Evaluation Process, data collected on DDOT services are compared to the Service Standards to determine whether individual existing service performs at acceptable levels and to evaluate potential service changes. The Service Standards

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are also used to compare performance of existing services, service changes, and proposed new services to prioritize the allocation of resources within the system.

Because the overall levels of funding for service are determined through the annual budget process, the Service Evaluation Process which includes the Service Standards helps ensure an effective allocation of budgeted funds. The Service Standards and Service Evaluation Process can also be used to identify service improvements that are not feasible within the existing budget and could be considered for future funding.

Each of the Service Standards is expressed as either a threshold that must be met, or a guideline that the Department of Transportation strives to meet.

**Title VI Equity Analysis \ Evaluation and Policy for Proposed Adjustments to Passenger Fares, Route, Hours of Service, and other Changes**

The FTA Circular 4702.1B “Title VI Program Guidelines for Federal Transit Administration Recipients” provides that recipients “can implement a fare increase or major service increase or reduction that would have disproportionately high and adverse effects provided that the recipient demonstrates that the action meets a justifiable need that is in the public interest and that alternatives would have more severe adverse effects than the preferred alternative.” DDOT Administration must illustrate in their decisions and conclusions that the alternatives, in the form of cutbacks in the service as proposed in the public docket and in subsequent proposals, would have a more severe adverse effect and therefore the adjustments to passengers’ fares, routes, hours of service and other changes are justified under title VI. All decisions must be supported by current ridership data and the performance measures of 1) Average passengers per revenue hour and 2) Average cost per passenger, to determine productivity by route during Weekday, Saturday, and Sunday Service. The results will be compared against similar service types based on the evaluation methodology outlined in the service

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evaluation and modification process. As well as the collective opinion of DDOT customers, as reflected in testimonies submitted at the public hearings and the results of the public survey instruments.

## **MITIGATION**

A transit agency or a recipient of federal funds can implement a major service reduction or fare increase that would have a disproportionate high and adverse effect provided that it is demonstrated that the action meets a substantial need that is in the public interest and that alternatives would have more severe adverse effects than preferred alternatives.

All analysis must show that the approved changes are of a last resort for balancing the budget after consideration of various alternatives. In addition, this analysis must show that DDOT took other actions to close the budget gap such as a reduction in force, moving money from the capital budget over the operating budget, and most importantly, maintaining DDOT's current service levels.

DDOT's implementation strategies for the proposed changes to fares and service include a high level of public outreach in advance of making the changes in order to gather public feedback and input. Ads should be run in the ethnic press, both paper and online. Send press releases to radio, TV and newspapers. Placards advertising the hearing should be posted on buses in English Arabic and Spanish. An abbreviated "Notice of Public Hearing" should be translated into Spanish and Arabic and a detail "Notice of Public Hearing" are to be translated into the respective languages. Notices are to be provided to community organizations located in areas with high concentrations of limited English speakers. Language assistance, both translated documents and interpreters, are made available at the public hearings.

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**Adverse Effect for Impact Determination**

Major Service Change Policy: A service equity analysis will be conducted whenever DDOT implements a major service change to the bus or rail system as define in this policy. A major service change to bus or rail system is defined as the addition of, or reduction in, more than twenty five percent (25%) of the bus system's riders or vehicle revenue hours through one or more route changes that would remain in effect in excess of one hundred eighty (180) days.

Disparate Impact Policy: A major service change to the bus or rail system will be deemed to have a disparate impact on minority populations for high and adverse effect on minority populations is being practice as the percentage being greater than twenty five percent (25%) of riders or vehicle hours on above-non-minority-classified routes affected by the major service change.

Disproportionately Burden Policy: A major service change to the bus or rail system will be deemed to have a disproportionate burden for high and adverse effect on low-income populations is being practice as the percentage being greater than twenty five percent (25%) of riders or vehicle revenue hours on above –poverty-level classified routes affected by the major service change.

In any case of changes when there is an effect of greater than twenty five percent (25%) changes are not approved or implemented without a Service Equity Analysis \ Evaluation. The widespread nature of the Minority and Low Income populations in the City of Detroit, lends itself to the situation where a majority of the service tract(s) associated with DDOT's routes are Minority and Low Income.

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## **Fare Equity Analysis \ Evaluation**

Fare Change: A fare equity analysis \ evaluation will be conducted whenever DDOT implements a fare change, regardless of the amount of increase or decrease, except for those fare changes mandated by Federal, State or Local law. A fare change is defined as an increase or decrease in fares: (a) on the entire system, (b) on certain transit modes, or (c) by fare payment type or fare media.

The exceptions are as follows:

- “Dump the pump or spare the air days” or other instances when a local municipality or DDOT has declared that all passengers ride free;
- Temporary fare reductions that are mitigating measures for other actions (i.e. construction activities that close a segment of the bus or rail system); or
- Promotional fare reductions that last less than one hundred eighty (180) days.

B. Disparate Impact Policy: A fare change will be deemed to have a disparate impact on minority populations if its implementation results in either:

- When one (1) fare change is proposed, the percentage of impacts of the proposed fare change borne by minority riders as a result of the proposed fare change is at least twenty five percentage points (25%) higher than the percentage of impacts of that proposed fare change on the overall rider population; or
- When one or more than one (1) fare change is proposed:
  - a. For each fare change in the package: the percentage of impact of each individual proposed fare change borne by minority riders as a result of the proposed fare change is at least twenty five percentage points (25%) higher than the percentage of impacts of that proposed fare change on the overall rider population; and
  - b. For the total package of fare changes : the aggregate percentage of impacts for the proposed fare changes borne by minority riders as a result of the

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proposed fare changes is at least twenty five percentage points (25%) higher than the aggregate percentage of impacts on the overall rider population.

C. Disproportionate Burden Policy: A fare change will be deemed to have a disproportionate burden on low-income populations if its implementation results in either:

- 1 When one (1) fare change is proposed, the percentage of impacts of the proposed fare change borne by low-income riders as a result of the proposed fare change is at least twenty five percentage points (25%) higher than the percentage of impacts of that proposed fare change on the overall rider population; or
- 2 When more than one (1) fare change is proposed:
  - a. For each fare change in the package: the percentage of impacts of a single proposed fare change borne by low-income riders as a result of the proposed fare change is at least twenty five percentage points (25%) higher than the percentage of impacts of that proposed fare change on the overall rider population; and
  - b. For the total package of fare changes: the aggregate percentage of impacts for the proposed fare changes borne by low-income riders as a result of the proposed fare changes is at least twenty five (25%) greater than the aggregate percentage of impacts on the overall rider population.

**When a Major Service or Fare Change is Deemed to Have a Disparate Impact and/or Disproportionate Burden**

- A. Avoid, Minimize, or Mitigate impact and/or Burden: If a proposed major service change or fare change is deemed to have a disparate impact and/or disproportionate burden, DDOT shall consider modifying the proposed changes

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in order to avoid, minimize or mitigate the disparate impact(s) or disproportionate burden (s) of the proposed change. Any modifications to the proposed change must be reanalyzed according to the disparate impacts and /or disproportionate burdens of the change.

- B. No Alterations or unable to Remove Impact and /or Burden: If DDOT chooses not to alter the proposed major service or fare change, or if modifications to the proposed major service or fare change do not remove the disparate impact (s) or disproportionate burden(s), the following steps must be taken:
  - 1. If DDOT chooses not to alter the proposed major service or fare change, or if modifications to the proposed major service change or fare change do not remove the disparate impact, DDOT may implement the major service or fare change only if:
    - a. DDOT has a substantial legitimate justification for the proposed service or fare change, and
    - b. DDOT can show that there are no alternatives that would have a smaller disparate impact on minority riders that would still accomplish DDOT's legitimate program goals.
  - 2. If DDOT chooses not to alter the proposed major service change or fare change, or if modifications to the proposed major service change or fare change do not remove the disproportionate burden on low-income riders:
    - a. DDOT shall take steps to avoid, minimize, or mitigate those impacts where practicable, and
    - b. DDOT should describe alternative service and/or fares available to low income customers.

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**Conclusions**

The Equity Analysis \ Evaluation submitted must show that passenger fares, route, hours of service, and other changes include all public comments. The customer evaluation that has been noted or recorded must be illustrated in the final report for Board and management decisions; as the justification for policy compliance; addressing the adverse effect for impact determination for all approved changes.



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## **I. OBJECTIVES**

The purpose of the Service Standards is to ensure that DDOT's service meets customers' needs and is provided in a cost-effective and equitable manner. Many of the standards outlined in this document are also contained as objectives in the DDOT statement of purpose, goals and budget summary. This connection reflects DDOT's commitment to the public to ensure the consistent delivery of quality service.

These service standards were created to provide a means to:

***"...strive for excellence in providing public transit services that are customer-focused, efficient, equitable, fiscally prudent, reliable, safe and secure for all users."***

Internal staff review and subsequent approval by management of the service standards will occur annually. This process facilitates the guidance from Southeast Michigan Regional Transit Authority as well as continual analysis of the effectiveness of services being provided, in addition to ensuring equitable, consistent delivery of services and use of resources.

While this document provides tools to aid in assessment of service productivity, it also identifies policy standards that will be maintained to guide the development and evaluation of DDOT's services.

Any proposed exceptions to the established standards will be presented to DDOT's management for consideration when involving service essential to maintaining system integrity.

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The following fundamental goals and their objectives provide context for service guidelines:

**Goal 1:**

Ensure the design of effective, efficient, and equitable transit service.

**Objectives**

- Design cost-effective regional transit services that support both existing and emergent origin-destination patterns.
- Develop key bus arterial networks to ensure critical regional mobility and connect all neighborhoods in the city and its environs while providing equal access thorough out DDOT's services.
- Apply a cost-effective standard while recognizing the special needs of diverse customer groups.
- Distribute services and customer amenities based on ridership, equity and geographic balance.

**Goal 2:**

Provide a uniform and consistent methodology for planning; designing; and evaluating transit services and proposals within applicable laws, policies and regulations.

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**Objectives**

- Develop a consistent, regular process for improving service in areas with demonstrated growth and transit development or potential demand.
- Address customer and community service needs and requests in a consistent, equitable and thorough manner by optimizing engagement of local communities in the service planning and delivery process.
- Utilizes the service evaluation process that reviews proposals, suggestion receipts, operations screening, evaluation request and public recommendations for the approval of service changes.
- Evaluate, implement and operate services consistent with Title VI and the Americans with Disabilities Act (ADA) requirements.

**Goal 3:**

Provide regional mobility and transit options for diverse customer access through collaboration and cooperation under the guidance of the Southeast Michigan Regional Transit Authority.

**Objectives**

- Develop intermodal and multimodal services between AATA, DDOT, M-1/M-2 Woodward Avenue Streetcar Project, People Mover, SMART and Transit Windsor, in addition to connections and transfers that maximize transit options available to regional customers of Macomb, Oakland, Washtenaw and Wayne Counties.

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- Track changes in customer' perception of service as well as the impact of improvement programs through DDOT's Customer profile and Quality of service Survey. Provide in-depth research and analysis of all data for operations, planning and scheduling service delivery.

## **Federal Requirements**

As a recipient of Federal monies, DDOT is subject to certain rules and regulations. The federal rules and regulations directly affecting the delivery of service by DDOT cover four areas: Public hearing requirements for fare and service changes, charter/school service restrictions, service requirements for the elderly/disabled and Title VI of the Civil Rights Act of 1964.

The Title VI regulations prohibit discrimination based on race, color, or national origin in the provision of any program or activity, including transit service, receiving federal financial assistance. The specific objectives of this federal regulation are to ensure that the following areas are provided without regard to race, color, or national origin: (a) equitable distribution of service; (b) equal access and mobility; (c) opportunities to participate in the transit planning and decision making processes; (d) facilities; and (e) corrective and remedial action to prevent discriminatory treatment.

Service standards are particularly identified in the Federal Register for Title VI and are defined as the "established policy or service performance measure used by a transit provider or other applicant, recipient, or sub-recipient as a means to plan, program, or distribute services within its service area." Five indicators are listed for inclusion to maintain compliance with Title VI.

- a) Vehicle Load- An indicator of the extent of probable overcrowding or the need for additional vehicles.

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- b) Vehicle Assignment-The process by which transit vehicles are assigned to routes throughout the system due to variations among vehicles.
  
- c) Vehicle Headway-A measurement of the time interval between two vehicles traveling in the same direction on the same route.
  
- d) Distribution of Transit Amenities-Items of comfort and convenience that is available to the general riding public (escalators at people mover stations, transit center facilities, etc.)
  
- e) Transit Access-The distance a person must travel to gain access to transit service. This serves as a general measure of the distribution of routes within a transit district and applies to existing services and proposed changes.

**Accessibility Requirements**

Section 504 of the Rehabilitation Act of 1973 (as amended) and the Urban Mass Transportation Act established requirements on transportation for the elderly and disabled for all planning, capital, and operating assistance projects receiving federal financial assistance.

DDOT is also subject to the American with Disabilities Act of 1990 (ADA). Required plans have been submitted to and approved by the Federal Transit Administration Covering Complementary Paratransit and Key Station Conformance.

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**Labor Agreements**

Labor agreements by and between DDOT and various affiliated union divisions are negotiated on a periodic basis and are therefore, subject to change. The labor agreements can impact both the quantity and quality of service provided to the public due to the budgetary implications and work assignment rules contained in their provisions.

**VEHICLE DISTRIBUTION**

Vehicles shall be equitably distributed throughout the service area; this includes vehicles assigned to each garage and amount of service provided by each garage.

DDOT's bus fleet management plan functions to maintain the average fleet age distributed across the divisions. Factors that must be considered include:

- Vehicle type availability by garage
- Peak vehicle requirement by garage
- Maintenance capabilities by garage

**Maintenance Operation practices:**

**Vehicle Types**

Vehicle types are placed into service appropriately and are equally distributed according to the storage capacity of the facility to which they are assigned. At the present only two of the three DDOT satellite terminal facilities are in operation. When all three facilities are in operation vehicle types will be subdivided into thirds. This practice encompasses newly purchased and older vehicles currently in operation.

**Peak Vehicles**

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Peak vehicle requirements are predetermined and set by the Scheduling Division using DDOT's Service Standards for route scheduling and productivity. Each terminal is required to meet the assigned pull out obligation with service ready vehicles for each day's scheduled assignment of routes.

**Maintenance Capabilities**

Maintenance capabilities at each terminal are determined by the size and the vehicle capacity of the facility. Currently, our Coolidge terminal has greater capacity than Gilbert terminal. Therefore, the number of vehicles assigned, peak requirements and service obligation by routes are equally distributed throughout our system of operations. All vehicles assigned terminal operations are service ready on a daily basis. Vehicles that are inoperable and require extensive repairs are placed in our heavy maintenance facility for needed repairs to restore their service readiness. DDOT only use two types of vehicle (New Flyer and Nova Coaches). Therefore, our seating capacity assigned to routes with higher ridership and/or during peak periods all have equally distributed load factors. Vehicles assigned to express or commuter service are also governed accordingly. DDOT does not deploy clean-fuel vehicles such as compressed natural gas and/or hybrid electric buses on any of our service routes.

**Transportation Operation Practices:**

**Vehicle Dispatching**

Vehicles assigned to routes are connected to the dispatching process that is administered by the Transportation Station Worker (TSW). This position assigns vehicles in proper operating condition to scheduled runs as well as directs the operators to the vehicles they are to use on their runs. The process in which assignments are made is driven by a rotation system of daily assignments of vehicles from different vehicle line series stored in the ready lines applicable bay. There are assigned bays for each type of vehicle in DDOT's fleet. The daily rotation assignment starts from different bay location on a first in first out basis. This guarantees that all series of DDOT's vehicles operates on all routes randomly covering the service demographics.

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**Vehicle Service Capability Priority**

DDOT understands that there may be times that maintenance requirements for various reasons may prevent a full compliment of ready line vehicles to meet scheduling required service delivery. Therefore, a systematic approach to assuring scheduling reliability to fill needed run assignments for route service priority are as follows:

Schedule time sequence order the first available vehicle is assigned.

Service time sensitive vehicles as prescribe by vehicle maintenance for intermittent use on a limited basis (e.g. pm inspections).

Scheduling required vehicle that are equipped with Automatic Passenger Counters and Automatic Vehicle Locators to be assigned on routes being surveyed for data collection of route productivity information required by the Service Standards.

***Title VI Equity Analysis \ Evaluation and Policy for Proposed  
Adjustments to Passenger Fares, Route, Hours of Service, and other  
Changes***

The FTA Circular 4702.1B "Title VI Program Guidelines for Federal Transit Administration Recipients" provides that recipients "can implement a fare increase or major service increase or reduction that would have disproportionately high and adverse effects provided that the recipient demonstrates that the action meets a justifiable need that is in the public interest and that alternatives would have more severe adverse effects than the preferred alternative." DDOT Administration must illustrate in their decisions and conclusions that the alternatives, in the form of cutbacks in the service as proposed in the public docket and in subsequent proposals, would have a more severe adverse effect and therefore the adjustments to passengers' fares, routes, hours of service and other changes are justified under title VI. All decisions must be supported by current ridership data and the performance measures of 1) Average passengers per revenue hour and 2) Average cost per passenger, to determine productivity by route during Weekday, Saturday, and Sunday Service. The results will be compared against similar service types based on the evaluation methodology outlined in the service evaluation and modification process. As well as the collective opinion of DDOT customers, as reflected in testimonies submitted at the public hearings and the results of the public survey instruments.



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**DETERMINATION OF DISPROPORTIONATE IMPACT ON MINORITY  
AND LOW INCOME RIDERS AND ACTIONS TO MITIGATE**

**IMPACT DETERMINATION**

**DDOT Fares**

*Choose options that you would be more likely to support. If there are none that you would likely support, make no selection.*

- Regular Boarding Charges
- Peak Period Charges
- Express Boarding Charges
- Other Boarding Charges
- Weekly Bus Pass
- Transfer Duration
- Transfer Discounts
- Monthly Bus Pass
- Regional Bus Pass

**DDOT Service Changes**

*Choose options that you would be more likely to support. If there are none that you would likely support, make no selection. See proposed DDOT service changed.*

- Increase time between buses or eliminate trips for select lines and routes (savings)
- Eliminate select routes or route segment (savings)
- Eliminate select lines (savings)
- Restructure service on select routes and lines (savings)
- Eliminate overlap with local service (savings)
- Reduce service on holidays: (choose number and give savings)
- Reduce seasonal service to bring it in line with actual service needs for the day after Thanksgiving and the week between Christmas and New Years Day.
- Reduce Weekend late night service (savings)
- Reduce Christmas/New Years seasonal service (savings)
- Reduce bus Stops on select lines (savings)

**Demographic Information**

*Please tell us where you live. This information will help DDOT's Administration distinguish residents' fare and service preference along with the equity distributions as well.*

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**I live in**

Detroit Proper: East Side – North Side – South Side – West Side

Downtown

Central Business District (CBD)

Suburban Detroit (specify) \_\_\_\_\_

Other (specify) \_\_\_\_\_

**Voluntary Title VI Public Involvement Survey**

*Title VI of the Civil Rights Act of 1964 prohibits discrimination on the basis of race, color, and national origin in programs and activities receiving federal financial assistance. The Detroit Department of Transportation (DDOT) is required to ensure that all segments of the population have full and fair participation in transportation decision making.*

*To help with this, we ask that you voluntarily provide us with information regarding your race/ethnicity and household income. Any information you disclose is confidential and is intended solely for the use of allowing DDOT to gather data which will allow us to monitor our compliance with federal nondiscrimination laws.*

**What is your estimated TOTAL HOUSEHOLD INCOME in 2011 before taxes?**

\$10,000 - \$20,000

\$20,001 - \$40,000

\$40,001 - \$80,000

More than \$80,000

**What is your RACE / ETHNICITY?**

Asian

Black/African American

Hispanic

Native American/American Indian

White

Other (please specify)

*Thanks you for taking the time to express your preference on balancing DDOT's Budget requirements. DDOT's Administration will take your input into account in preparing its Planning decisions for the proposed changes.*

**Low Income and Minority Areas**

These categories identifies concentrations of primarily low-income and minority riders. "Low-income and Minority," For this purpose, is defined as fifty percent (50%) of the population within a census tract falling below 125% of the federal definition of the poverty level for a family of four. This percentage (125%) was established to expand the economic reach of these categories to encompass significant groups of low-income and minority riders

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**MITIGATION**

A transit agency or a recipient of federal funds can implement a major service reduction or fare increase that would have a disproportionate high and adverse effect provided that it is demonstrated that the action meets a substantial need that is in the public interest and that alternatives would have more severe adverse effects than preferred alternatives.

All analysis must show that the approved changes are of a last resort for balancing the budget after consideration of various alternatives. In addition, this analysis must show that DDOT took other actions to close the budget gap such as a reduction in force, moving money from the capital budget over the operating budget, and most importantly, maintaining DDOT's current service levels.

DDOT's implementation strategies for the proposed changes to fares and service include a high level of public outreach in advance of making the changes in order to gather public feedback and input. Ads should be run in the ethnic press, both paper and online. Send press releases to radio, TV and newspapers. Placards advertising the hearing should be posted on buses in English Arabic and Spanish. An abbreviated "Notice of Public Hearing" should be translated into Spanish and Arabic and a detail "Notice of Public Hearing" are to be translated into the respective languages. Notices are to be provided to community organizations located in areas with high concentrations of limited English speakers. Language assistance, both translated documents and interpreters, are made available at the public hearings.

**Route Productivity** is based on current ridership information and the performance measures of 1) Average passengers per revenue hour and 2) Average cost per passenger, to determine productivity by route during weekday, Saturday, and Sunday service. The results will be compared against similar service types based on the evaluation methodology outlined in the service evaluation and modification process.

**Service Evaluation and Modification Process**

Methodology: A route will be determined as deficient if, for two consecutive quarters, its annual average passenger per revenue trip is 50% or less than the average for similar existing service and its annual average cost per passenger is 150% or greater than the average for similar existing service. These measures will be calculated separately for mainline, local, feeder, semi-express and small vehicle services (e.g., trolleys).

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Following assessment and subsequent analysis, proposals will be submitted for consideration for service modification to increase productivity and efficiency for both the passengers and DDOT. If a route is found deficient and extenuating circumstances do not exist, a strategy will be developed which may include a schedule change and other corrective actions. The strategy to include targeted marketing will be evaluated for six months to permit new and existing passenger ridership patterns to develop. If implementation of the strategy fails to improve a route's performance, staff may create a new strategy, allowing an additional six months to establish improved ridership. If reasonable measures do not result in the route meeting established standards within the scheduled time, staff will hold a public hearing to gather input regarding the proposed elimination of the route or route segment. Factors affecting service modification implementation include (1) evaluation of budget availability for expected service modifications or additions; (2) evaluation of requested service changes including deletion, modification, or new service, and (3) results of the public involvement process.

***A major service change to bus or rail system is defined as the addition of, or reduction in, more than twenty five percent (25%) of the bus system's riders or vehicle revenue hours through one or more route changes that would remain in effect in excess of one hundred eighty (180) days***

**Major changes are ones that will have an adverse effect on riders, resource requirements, route structure, service delivery or change in service of 25% or more of the number of transit route miles of a route; or 25% or more of the number of transit revenue vehicles miles of a route computed on a daily basis for the day of the week for which the change is made (as set forth in this document). These changes are evaluated and implemented only through development of the triennial service plan.**

Major changes that will have an adverse affect on resources and may potentially have an adverse affect on riders are as follows:

- Major Service restructuring
- Implementation of new routes or services
- Elimination of a route or service
- Elimination of part of a route
- Span of service changes greater than one (1) hour
- 25% or more of the number of transit route miles of a route; or 25% or more of the number of transit revenue vehicles of a computed on a daily basis for the day of the week for which the change is made.

Public Hearings are required as follows:

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- Prior to raising fares or implementing a major change in transit services. (Federal Transit Act. Section 9 (e) (3) (H)).
- If there is a change in service of 25% or more of the number of transit route miles of a route; or 25% or more of the number of transit revenue vehicles miles of a route computed on a daily basis for the day of the week for which the change is made.
- When a new transit route is established.
- Before eliminating an existing transit route.
- Prior to any application for a grant or loan under the Federal Transit Act to finance the acquisition, construction, reconstruction, or improvement of facilities or equipment which will substantially affect a community or its mass transportation service, DDOT shall afford an adequate opportunity for a public hearing, pursuant to adequate public notice, and hold such hearing unless no one with a significant economic, social, or environmental interest in the matter requests a hearing. (Federal Transit Act. Section 3 (d) (1))

Exemptions to the requirement are:

- If reduced or free promotional fares are instituted on a daily basis or periodically within a period of 180 days.
- If an emergency situation occurs, a service change may be implemented immediately. Examples of emergency service changes include but are not limited to those made because of a power failure for a fixed-guide way system, the collapse of a bridge over which bus routes pass, major road or rail construction of inadequate supplies of fuel, etc.
- Experimental service changes instituted for 180 days, or less.
- For headway adjustments of up to ten (10) minutes during peak hour service; and up to twenty (20) minutes during non-peak hour service.
- Standard seasonal variations are exempt unless the number, timing or types of standard seasonal variation change.

An accurate stenographic transcription or tape recording will be made of each public hearing. Public hearings will be held at facilities convenient to the affected customers and accessible to the disabled.

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**Adverse Effect for Impact Determination**

**Major Service Change Policy:** A service equity analysis will be conducted whenever DDOT implements a major service change to the bus or rail system as define in this policy. A major service change to bus or rail system is defined as the addition of, or reduction in, more than twenty five percent (25%) of the bus system's riders or vehicle revenue hours through one or more route changes that would remain in effect in excess of one hundred eighty (180) days.

**Disparate Impact Policy:** A major service change to the bus or rail system will be deemed to have a disparate impact on minority populations for high and adverse effect on minority populations is being practice as the percentage being greater than twenty five percent (25%) of riders or vehicle hours on above-non-minority-classified routes affected by the major service change.

**Disproportionately Burden Policy:** A major service change to the bus or rail system will be deemed to have a disproportionate burden for high and adverse effect on low-income populations is being practice as the percentage being greater than twenty five percent (25%) of riders or vehicle revenue hours on above –poverty-level classified routes affected by the major service change.

In any case of changes when there is an effect of greater than twenty five percent (25%) changes are not approved or implemented without a Service Equity Analysis \ Evaluation. The widespread nature of the Minority and Low Income populations in the City of Detroit, lends itself to the situation where a majority of the service tract(s) associated with DDOT's routes are Minority and Low Income.

**Fare Equity Analysis \ Evaluation**

**Fare Change:** A fare equity analysis \ evaluation will be conducted whenever DDOT implements a fare change, regardless of the amount of increase or decrease, except for those fare changes mandated by Federal, State or Local law.

A. fare change is define as an increase or decrease in fares: (a) on the entire system, (b) on certain transit modes, or (c) by fare payment type of or fare media.

The exceptions are as follows:

- “Dump the pump or spare the air days” or other instances when a local municipality or DDOT has declared that all passengers ride free;
- Temporary fare reductions that are mitigating measures for other actions (i.e. construction activities that close a segment of the bus or rail system); or
- Promotional fare reductions that last less than one hundred eighty (180) days.

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**B. Disparate Impact Policy:** A fare change will be deemed to have a disparate impact on minority populations if its implementation results in either:

- When one (1) fare change is proposed, the percentage of impacts of the proposed fare change borne by minority riders as a result of the proposed fare change is at least twenty five percentage points (25%) higher than the percentage of impacts of that proposed fare change on the overall rider population; or
- When one or more than one (1) fare change is proposed:
  - a. For each fare change in the package:: the percentage of impact of each individual proposed fare change borne by minority riders as a result of the proposed fare change is at least twenty five percentage points (25%) higher than the percentage of impacts of that proposed fare change on the overall rider population; and
  - b. For the total package of fare changes : the aggregate percentage of impacts for the proposed fare changes borne by minority riders as a result of the proposed fare changes is at least twenty five percentage points (25%) higher than the aggregate percentage of impacts on the overall rider population.

**C. Disproportionate Burden Policy:** A fare change will be deemed to have a disproportionate burden on low-income populations if its implementation results in either:

- 1 When one (1) fare change is proposed, the percentage of impacts of the proposed fare change borne by low-income riders as a result of the proposed fare change is at least twenty five percentage points (25%) higher than the percentage of impacts of that proposed fare change on the overall rider population; or
- 2 When more than one (1) fare change is proposed:
  - a. For each fare change in the package: the percentage of impacts of a single proposed fare change borne by low-income riders as a result of the proposed fare change is at least twenty five percentage points (25%) higher than the percentage of impacts of that proposed fare change on the overall rider population; and
  - b. For the total package of fare changes: the aggregate percentage of impacts for the proposed fare changes borne by low-income riders as a result of the proposed fare changes is at least twenty five (25%) greater than the aggregate percentage of impacts on the overall rider population.

**When a Major Service or Fare Change is Deemed to Have a Disparate Impact and/or Disproportionate Burden**

A. Avoid, Minimize, or Mitigate impact and/or Burden: If a proposed major service change or fare change is deemed to have a disparate impact and/or disproportionate burden, DDOT shall consider modifying the proposed changes in order to avoid, minimize or mitigate the disparate impact(s) or disproportionate burden (s) of the

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proposed change. Any modifications to the proposed change must be reanalyzed according to the disparate impacts and /or disproportionate burdens of the change.

B. No Alterations or unable to Remove Impact and /or Burden: If DDOT chooses not to alter the proposed major service or fare change, or if modifications to the proposed major service or fare change do not remove the disparate impact (s) or disproportionate burden(s), the following steps must be taken:

1. If DDOT chooses not to alter the proposed major service or fare change, or if modifications to the proposed major service change or fare change do not remove the disparate impact, DDOT may implement the major service or fare change only if:

a. DDOT has a substantial legitimate justification for the proposed service or fare change, and

b. DDOT can show that there are no alternatives that would have a smaller disparate impact on minority riders that would still accomplish DDOT's legitimate program goals.

2. If DDOT chooses not to alter the proposed major service change or fare change, or if modifications to the proposed major service change or fare change do not remove the disproportionate burden on low-income riders:

a. DDOT shall take steps to avoid, minimize, or mitigate those impacts where practicable, and

b. DDOT should describe alternative service and/or fares available to low income customers.

### **Conclusions**

The Equity Analysis \ Evaluation submitted must show that passenger fares, route, hours of service, and other changes include all public comments. The customer evaluation that has been noted or recorded must be illustrated in the final report for Board and management decisions; as the justification for policy compliance; addressing the adverse effect for impact determination for all approved changes.

### **ENVIRONMENTAL JUSTICE; PROPOSED CIRCULAR**

A notice by the **Federal Transit Administration** on **09/29/2011**

The Federal Transit Administration (FTA) has placed in the docket and on its Web site, proposed guidance in the form of a Circular on incorporating environmental justice principles into plans, projects, and activities that receive funding from FTA. This proposed guidance provides recommendations to State Departments of Transportation, Metropolitan Planning organizations, public transportation providers, and other recipients of FTA funds on how to determine whether environmental justice populations would be subjected to disproportionately high and adverse human health or environmental effects as a result of a transportation plan, project, or activity; and how to avoid, minimize, or mitigate these effects.



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## **II. Strategic Planning and Operational Performance Plan**

The following measures have been created for DDOT's "Strategic Planning and Operational Performance Plan" which outlines the planned measurable activities to support the Service Standards and its objectives:

### **1. Bus AVL Generated On-time Performance**

Definition: Bus mid-route on-time performance (OTP) as measured against defined time points.

Calculation Method: Bus mid-route on-time performance is calculated as the percentage of departures from the defined time points beyond 5 minute interval counted against the scheduled departure time, or by dividing the number of departures beyond 5 minute interval by the overall number of departures, and multiplying the results by 100.

Target & Performance Range:            On target  $\geq$  85%  
  Need improvement  $\leq$  85%  
  Fail  $\leq$  75%

Data Source & Format:                    AVL DATA

Report Frequency:                      Weekly

Data Breakdown:                        Garage Facilities / Time Periods / Routes

Data Owner:                              Planning/Service Monitoring

Performance Responsibility:            Manager of Strategic Planning

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**2. Bus In-Service Delays**

Definition: The percentage of bus trips delayed by 10 minutes or greater.

Calculation Method: Bus in-Service Delays are calculated as the percentage of bus trips delayed by 10 minutes or more; or by dividing the number of trips delayed by 10 minutes or more by the overall number of scheduled trips, and multiplying the result by 100.

Target & Performance Range: 90%

Data Source & Format: Control Center Report

Report Frequency: By shift / Daily / Weekly / Monthly / Annually

Data Breakdown: Garage Facilities / Routes-Runs

Data Owner: General Manager Operations

Performance Responsibility: General Manager Operations

**3. Mean Distance between Failures (MDBF); Fleet Series.**

Definition: MDBF tracks performance of DDOT bus fleet as a whole and demonstrates how a series of buses perform in comparison to the rest of the fleet. This process identifies challenged buses.

Calculation Method: MDBF is calculated by dividing bus miles by chargeable service calls.

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<u>Target &amp; Performance Range:</u>	On target $\geq 7,000$ Need improvement $< 6,000$ Fail $\leq 5,000$
<u>Data Source &amp; Format:</u>	Fleet Maintenance and AVL reports
<u>Report Frequency:</u>	By shift; daily, weekly, monthly, annually
<u>Data Break-down-Fleet:</u>	By series and garages.
<u>Data Owner:</u>	General Manager Maintenance

**4. Off-the-Lot Performance (On Time Pullouts)**

Definition: The percentage of delays associated with the bus pullout during AM Peak and PM Peak time periods.

Calculation Method: Off-the-lot performance is calculated by dividing the number of delays by total peak vehicle requirements, and multiplying the result by 100.

Target & performance range:	On Target 100% Need improvement $< 100\%$ Fail $\leq 98\%$
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Data Source & Format: Control Center morning report containing off-the-lot performance for the previous day.

Report Frequency: By shift; daily; weekly; monthly; annually





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multiplying the result by 100. A route is considered deficient if, for two consecutive reporting periods, its annual average passengers per revenue hour is 50% or less than the system-wide average for similar existing service, and its annual average cost per passenger trip is 150% or greater than the system-wide average for similar existing service.

<u>Data Source &amp; Format:</u>	Transit Planning / Service Monitoring
<u>Target &amp; Performance Range:</u>	On target $\leq 5\%$ Need improvement $> 5\%$ and $< 10\%$ Fail $\geq 10\%$
<u>Report frequency:</u>	Bi-annually
<u>Data Break-down-</u>	Weekday, Saturday and Sunday/ Time periods
<u>Data Owner Strategic-</u>	Transit Planning / Service Monitoring
<u>Performance Responsibility-</u>	Manager, Strategic Transit Planning

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### **III. Bus Services and Service Delivery**

The Detroit Department of Transportation operates complete bus transit services. This policy addresses all of DDOT's fixed route services. For the purpose of this policy, "Bus" encompasses all rubber-tired vehicles, including diesel, CNG, trackless trolley, etc.

#### ***FIXED ROUTE BUS SERVICE***

Fixed-route Services operate on a predetermined, fixed-time schedule over a prescribed route using specified streets. The consistency of fixed (or regular) route service allows the printing and distribution of timetables and route maps. Fixed-route service is operated by buses generally with 25 or more seats and constitutes the majority of DDOT's bus service. Fixed-route service is further classified into two major types: Local Service and Commuter Service.

#### **1. LOCAL SERVICE**

Local bus service is transit service that picks up and discharges passengers on a route and consequently operates at a relatively low average speed. In general, stops on local routes are closely spaced (where practical), and pick-ups/drop-offs are allowed at all stops over the entire route; however, some local routes operate with limited stops.

##### ***a. MAJOR ROUTES***

Routes that have a frequency of service of 20 minutes or less, (i.e., Michigan, Grand River, Woodward, Gratiot etc.). These routes are similar to local routes, but generally operate longer hours and at higher frequencies to meet high levels of passenger demand in high-density travel corridors.

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The Major Bus Routes ensure basic geographic coverage of frequent service in the most populated areas of the city's core and offer connections to other routes that extend throughout the region.

***b. LIMITED ROUTES***

Limited routes are similar to express routes. A large part of the limited route is characterized by high-speed operation, and a limited number of stops (generally a mile apart at major intersections and/or transfer points. Some restrictions on drop-offs/pick-ups may apply.

***c. CROSSTOWN ROUTES***

Routes that do not serve the core central business district but provide connecting links between radial routes in urban areas.

***d. CIRCULATOR ROUTES***

Routes that operate within a small geographic-area and provide service to a secondary destination.

***e. SHUTTLE ROUTES***

Routes that provide service between two areas, both of which would be considered secondary destinations.

**2. COMMUTER SERVICE**



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Commuter Service is transit service that travels directly to a major employment activity center with single or limited passenger pick-up locations and provides a limited number of peak-direction trips during peak-periods for work commuting purposes.

**a. PARK & RIDE ROUTES**

Routes that operate from a single or minimal number of pick-up points and travel directly to the activity center with no (or very limited) interim stops.

**b. EXPRESS ROUTES**

Provide a limited number of peak-direction trips during peak-periods for work commuting purposes. A large part of any express route is characterized by high-speed, non-stop operation, and a limited number of stops are provided only near route termini and starting point. Some restrictions on drop-offs/pick-ups may apply.

**3. OTHER SERVICES**

DDOT provides other transit services in addition to fixed-route bus service. These include demand-responsive services for mobility-disabled persons and for commuters, in an emergency without bus service, to take the passenger back to their car or their home. In addition, DDOT helps coordinate and may directly operate service to special events that are open to the general public or charter service for specified groups. Furthermore, DDOT may co-sponsor carpool/vanpool service in the region.

Descriptions of these services and eligibility guidelines are discussed below. These services are not covered by the standards presented in this document, which apply to fixed-route service only.

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**a. DEMAND RESPONSIVE SERVICE**

DDOT provides demand-responsive services that do not have fixed schedules on a daily basis and are geared primarily to the transportation needs of the mobility-disabled. These services are operated with small buses (10-15 seats) or van-sized vehicles and offer greater flexibility and personalization than fixed-route services. Demand-responsive service is classified under two major types: MetroLift and guaranteed ride home.

**b. METROLIFT –“PARATRANSIT SERVICE”**

DDOT provides complimentary paratransit services to individuals determined as ADA, paratransit eligible and are unable to use regular accessible fixed route bus service to meet their trip needs. This service is considered as a “safety net”, complimentary to regular bus service and therefore requires a determination of not only if a passenger is eligible for the service, but when and under what conditions. If a passenger is certified as “eligible”, the certification can be used (with certain conditions) on other transit systems’ ADA complimentary paratransit service. The Detroit MetroLift provides ADA paratransit eligible passengers 24-hour curb-to-curb service to destinations up to three-quarters of a mile outside the fixed-route system.

**c. GUARANTEED RIDE HOME**

SEMCOG (Southeast Michigan Council of Government) provides qualified commuters with a free ride home in the middle of the workday should they have an emergency and no midday bus service is available on their route. A taxi ride is arranged that picks up the passenger at his or her place of work within 20 minutes

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after contacting a DDOT representative. Riders must be registered with DDOT to use this service and must meet the emergency criteria of the program.

**4. SPECIAL BUS SERVICE**

**a. SPECIAL EVENTS**

DDOT provides bus service to “Special Events,” which are community events and activities that occur annually or are intermittent or seasonal. All special events services are available to the public at a fare designated for the service. Examples of these events are the Grand Prix Auto Race, Auto Show, and major sports activities, the State Fair, Thanksgiving Parade and Fireworks.

The annual DDOT budget includes funding for special events that are repeated from prior years, for certain new events that meet the criteria for special event service and for events which service is requested before the start of budget allocation. Thus, DDOT will provide special event service within budgetary constraints in accordance with the standard listed below.

***The following criteria shall apply to special event transit service:***

- The event must be open to and of general interest to the citizens of the DDOT Service Area. The Service must be open-door and must originate and end within the DDOT Service Area.
- The operation of the service must reduce traffic congestion at the event site and improve general mobility in the area.

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- The event sponsor must cover at least one-third (1/3) of the total event service operations cost. This reimbursement must be in the form of cash and can include cash fares collected from the users of the service.
  
- Information about DDOT's service must be a major feature of event advertising and promotion. No cash credit against the service is allowed for advertising value.

***b. CHARTERS***

Some events require transportation that is geared to only specific event participants (i.e., VIP). In these cases, the service is not open to the public, but only to those participating in the event. The Federal Transit Administration (FTA) defines these kinds of movements as charters. DDOT is restricted in, but is not prohibited from, using the agency's buses and operators for charter shuttles under FTA regulations.

DDOT will operate charters as the provider of last resort. Therefore, DDOT primarily serves as a broker of services for conventions and other charter services. DDOT helps convention planners define their transportation needs, develop a transportation plan and arrange for private carriers to provide the services. For conventions and other charter services, the sponsor is required to cover 100% of the service costs pursuant to DDOT's policies.

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## **IV. BUS SERVICE DELIVERY STANDARDS**

Scheduling is a craft, whether executed manually or with computer assistance.

Responsive schedule-making is a dynamic process, evolving with ridership trends, service demands and funding opportunities of the community. As ridership patterns change, schedulers are often faced with the complex task of making adjustments to schedules while keeping costs as low as possible. Sound decisions necessarily require timely and accurate information. Historically, a number of methods have been used to provide this information, which takes advantage of a wide variety of data collection and analysis techniques.

DDOT bus service scheduling standards for system changes are structured for twice a year (semi-annually) implementation of all productivity models. This proposed standard is designed to provide a logical balance between optimal cost efficiency and the provision of adequate service to the public.

### **SYSTEM MAPS**

DDOT will publish new system maps as needed or tri-annually to reflect all service delivery structure changes implemented through productivity enhancements or major service adjustments that affects a minimum of 10% of the system route(s) configuration.

#### **1. BUS HEADWAYS (SERVICE FREQUENCY)**

Definition: Bus headway is defined as the interval of time between buses traveling in any given direction (inbound/outbound) on any given route.

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Headways shall vary between peak periods and off-peak periods in order to minimize operating expenses and provide the most efficient service during weekday peak demand periods.

**POLICY HEADWAYS BY PERIOD**

- Weekday morning and afternoon peak period .....45 minutes or less
- Weekday off-peak/Weekends.....up to 75 minutes
- The off-peak standard will apply to weekday routes that maintain the same frequency during peak and off-peak periods.

No bus route shall have headways that exceed 75 minutes unless otherwise approved by the proper DDOT authorities.

The following factors will be analyzed when adjusting headways:

- Load Factor.
- Equipment allocation.
- Passenger demand.
- Route length.
- Running time.
- Passenger volume.
- Proximity of route termini to operating facilities of other routes.

When developing schedules, “clock-face” headways (10, 15, 20, 30, 40, 45, 60 or 75 minute intervals) will be employed where practical and feasible within fiscal and contractual constraints. Consistent trip departure times, along with clock-face headways, will facilitate passenger connections with other bus routes, as well as create timetables that are easier to commit to memory.

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**2. BUS LOAD FACTORS**

Definition: Load Factor is defined as the ratio of passengers on board a bus to the number of seats available.

**LOAD FACTOR STANDARDS**

The standard load factor for bus service is 1.25, not to exceed 1.5. The standard load factor for any service operating 10 or more miles per trip on limited access highway and all small vehicle service is 1.0 not to exceed 1.25. Therefore:

- A 40-foot bus with 50 riders is standard; 60 or more riders exceed the maximum load factor.
- A 35-foot bus with 44 riders is standard; 53 or more riders exceed the maximum load factor.
- A 30-foot bus with 32 riders is standard; 38 or more riders exceed the maximum load factor.
- A small vehicle with 11 riders is standard; 14 or more riders exceeds the maximum load factor

If a route exceeds these standards, it will be monitored. If the overload is documented for three days at a 1.50 load factor (1.25 for any service operating 10 or more miles per trip on limited-access highway and all small vehicle service), corrective action shall be taken to achieve balanced loading within acceptable limits of these standards.

**Service & Comfort Service Standard**

The Public perception of comfort and the reality of public safety are influenced by the number of passengers on the vehicle and whether or not a seat is available to each rider for all or most of the trip. The Vehicle Load Standards, which vary by mode and

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time of day, establish the average maximum number of passengers allowed per vehicle to provide a safe and comfortable ride.

**Vehicle Load**

As indicated in the frequency of Service Standards, the level of service provided by the Department of Transportation is primarily a function of the demand for that service, as demonstrated through the number of customers utilizing the service at different times during the day. On weekends and during some weekday time periods, most DDOT services operate with sufficient frequency to provide every passenger with a seat. However, during the heaviest weekday travel times or locations some passengers will need to stand.

During time periods when some passengers will be standing, the Detroit Department of Transportation will provide sufficient service so that vehicles are not excessively crowded. The purpose of the Vehicle Load Standard is to define the levels of crowding that are acceptable by mode and time period. The time periods used by the Department of Transportation for all modes, for both the Frequency of Service and Vehicle Load Standards, are defined earlier in this chapter (see Frequency of Service Standards).

Because light rail is planned for the core areas and will be heavily used throughout the day, some standees can be expected during all time periods. For the purposes of this policy, the core area, as it relates to light rail and street car vehicle Load Standard, is defined as follows:

**Table 1 DDOT Core Area Boundaries**

Light Rail Core Areas

Light Rail State Fair to Downtown Detroit



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By mode and time period, the acceptable levels of crowding are shown in the following table. The load standards in the table are expressed as a ratio of the number of passengers on the vehicle to the number of seats on the vehicle. To determine whether a service has an acceptable level of crowding, the vehicle loads are averaged over specified periods of time. Due to scheduling constraints and peaking characteristics, some individual trips may exceed the load levels expressed in the standards.

For most modes the load standards shown represent average maximum loads over any time period on weekdays and over the whole day on weekends. For bus, on weekdays the loads cannot exceed the standard when averaged over any 30-minute segment of an Early AM, AM Peak, Midday School or PM Peak period, or any 60-minute segment of a Midday Base, Evening, Late Evening or Night/Sunrise period. On weekend days, the loads cannot exceed the standard when averaged over any 60-minute segment of the whole service day.

**Table 2: Vehicle Load Standards by Mode**

<b>Mode</b>	<b>Time Period</b>	<b>Passengers/ Seats</b>
<b>Bus*</b>		
	<u>Early AM, AM Peak, Midday School &amp; PM Peak</u>	<u>150%</u>
	Midday Base, Evening, Late Evening, Night/Sunrise & Weekends	
	<u>Surface portions of routes</u>	<u>125%</u>
	<u>Expressway portions of routes</u>	<u>150%</u>
<b>Light Rail</b>		
	<u>Early AM, AM Peak, Midday School &amp; PM Peak</u>	<u>225%</u>
	Midday Base, Evening, Late Evening, Night/Sunrise & Weekend	

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<u>Downtown Area</u>	<u>225%</u>
<u>Stadium Area</u>	<u>225%</u>

\*For Bus, Light Rail, the vehicle Load Standard is based on the ratio of passengers to seating capacity at maximum load. For commuter Rail services, the load standard is based on the ratio of boarding passengers per vehicle to seated capacity.

For the purpose of the Vehicle Load Standard, “Bus” encompasses all rubber-tired vehicles, including diesel. Bio-diesel, trackless trolley, etc.

Street Car is an electrically powered vehicle running regularly along certain streets, usually on rails. Usually shares part of Right –of-Way. Receives power through a Trolley pole or a pantograph. Commuter Rail (CR) a transit mode that is an electric or diesel propelled railway for urban passenger train service consisting of local short distance travel operating between a central city and adjacent suburbs. Service must be operated on a regular basis by or under contract with a transit operator for the purpose of transporting passengers within urbanized areas (UZAs), or between urbanized area and outlying areas. Light Rail (LR) typically is an electric railway with a light volume traffic capacity compared to heavy rail (HR). It is characterized by passenger rail cars operating singly (or in short, usually two car, trains) on fixed rails in shared or exclusive right-of-way (ROW), low or high platform loading, and vehicle power drawn from an overhead electric line via a trolley pole or a pantograph.

### **3. ROUTE PRODUCTIVITY**

Ridership information that is reported on a quarterly basis will be used to calculate productivity by route for weekday, Saturday and Sunday service. The productivity standards established for bus service is as follows:

- Average Passengers per Revenue Hour
- Average Passenger per Revenue Mile

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- Average Cost per Passenger
- Average Passenger per Trip
- Farebox Recovery (Currently 12%)

Performance thresholds for these standards are determined quarterly based on comparison of any given route to similar service. A description of the process for using these measures is outlined in the service monitoring and ridership data collection guidelines.

**4. BUS STOP SPACING CRITERIA**

Bus stops shall be spaced in a manner that balances the need to minimize walking distances to bus stops while to minimizing travel time.

The following guidelines are established as optimum distances between bus stops although safety, passenger demand and operational conditions unique to each bus stop may change during actual application.

- **Low-density** areas- Four to six stops per mile.
- **High density** areas - Eight to ten stops per mile
- **Central Business District** –Eight to ten stops per mile.
- **Limited Stop Service** – Not less than ½ mile apart

Special consideration for closer spacing of stops will be given to schools, facilities for the elderly and disabled and other bus stop locations that make access to DDOT more convenient and safe.

- Long spans where no side streets intersect will be evaluated and the appropriate stop spacing will be determined.

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- To ensure that the proposed locations afford the optimum in safety and convenience for boarding and alighting customers, DDOT staff will survey site locations.

Spacing of bus stops will be considered when evaluating schedule adherence. Placing the stops too close together may be a contributing factor to service delays and stop placement may need to be adjusted while staying within the standards listed above.

### **5. VEHICLE DISTRIBUTION**

Vehicles shall be equitably distributed throughout the service area; this includes vehicles assignment to each garage and among service provided from each garage.

DDOT's bus fleet management plan functions to maintain the average fleet age distributed across the divisions. **Factors that must be considered include:**

1. Vehicle type availability by garage.
2. Peak vehicle requirement by garage.
3. Maintenance capabilities by garage.

#### **Maintenance Operation practices:**

##### **Vehicle Types**

Vehicle types are placed into service appropriately and are equally distributed according to the storage capacity of the facility to which they are assigned. At the present only two of the three DDOT satellite terminal facilities are in operation. When all three facilities are in operation vehicle types will be subdivided into thirds. This practice encompasses newly purchased and older vehicles currently in operation.

##### **Peak Vehicles**

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Peak vehicle requirements are predetermined and set by the Scheduling Division using DDOT's Service Standards for route scheduling and productivity. Each terminal is required to meet the assigned pull out obligation with service ready vehicles for each day's scheduled assignment of routes.

**Maintenance Capabilities**

Maintenance capabilities at each terminal are determined by the size and the vehicle capacity of the facility. Currently, our Coolidge terminal has greater capacity than Gilbert terminal. Therefore, the number of vehicles assigned, peak requirements and service obligation by routes are equally distributed throughout our system of operations. All vehicles assigned terminal operations are service ready on a daily basis. Vehicles that are inoperable and require extensive repairs are placed in our heavy maintenance facility for needed repairs to restore their service readiness. DDOT only use two types of vehicle (New Flyer and Nova Coaches). Therefore, our seating capacity assigned to routes with higher ridership and/or during peak periods all have the same load factors. Vehicles assigned to express or commuter service are also governed accordingly. DDOT does not deploy clean-fuel vehicles such as compressed natural gas and/or hybrid electric buses on any of our service routes.

**Transportation Operation Practices:**

**Vehicle Dispatching**

Vehicles assigned to routes are connected to the dispatching process that is administered by the Transportation Station Worker (TSW). This position assigns vehicles in proper operating condition to scheduled runs as well as directs the operators to the vehicles they are to use on their runs. The process in which assignments are made is driven by a rotation system of daily assignments of vehicles from different vehicle line series stored in the ready lines applicable bay. There are assigned bays for each type of vehicle in DDOT's fleet. The daily rotation assignment starts from different

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bay location on a first in first out basis. This guarantees that all series of DDOT's vehicles operates on all routes randomly covering the service demographics.

**Vehicle Service Capability Priority**

DDOT understands that there may be times that maintenance requirements for various reasons may prevent a full compliment of ready line vehicles to meet scheduling required service delivery. Therefore, a systematic approach to assuring scheduling reliability to fill needed run assignments for route service priority are as follows:

Schedule time sequence order the first available vehicle is assigned.

Service time sensitive vehicles as prescribe by vehicle maintenance for intermittent use on a limited basis (e.g. pm inspections).

Scheduling required vehicle that are equipped with Automatic Passenger Counters and Automatic Vehicle Locators to be assigned on routes being surveyed for data collection of route productivity information required by the Service Standards.

**6. TRANSIT ACCESS**

Transit access can be defined as a measure of the distance a person must travel to gain access to transit service. As a standard, this measure indicates the distribution of routes within a Transit Service Area.

Walking distance is used rather than 'air distance' to better represent a person's ability to gain access to the system. Transit access is measured by distance on the street network, as opposed to directional distance that does not consider physical barriers to travel. Bus services will have a maximum ¼ mile walking distance and 1/2 mile route spacing.

Exceptions will be considered when the following factors exist within the system.

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- Topographical barriers and street network restrictions.
- Service alignment that is designed to serve areas of higher demand or higher density.
- Existing service will not be monitored if to do so would be detrimental to the markets receiving service.
- Maximum walk access over ½ mile is probable in outlying areas on the edge of service coverage

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## **V. TRANSIT AMENITIES**

### **1. BUS SHELTER PLACEMENT**

#### **FACTORS TO BE CONSIDERED FOR BENCH OR SHELTER PLACEMENT:**

- Level of activity at the current bus stop.
  - Threshold for a bench – 17-74 average daily boardings
  - Threshold for a shelter – 75 or more average daily boardings.
  
- Input from the public through customer services.
  
- Existing bench or shelter locations will be considered for equity in distribution within the service area.
  
- Transfer Routes
  
- Location must accommodate a concrete pad and is required to set back two feet from the roadway.
  
- Surface of the location must be flat; not on a slope or next to a guard rail/barrier or fire hydrant.
  
- The bench or shelter must not block the view of vehicular traffic.
  
- Site must comply with all other requirements of the local jurisdiction.

Once a site has been approved for a bench or shelter based on the above criteria, a survey is completed, site drawings are produced, and the permit application is completed for each location. The entire package is then submitted to the appropriate jurisdiction for approval.



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**2. BUS STOP BENCHES**

The bench must not be located where an existing shelter or bench is located, unless additional seating capacity is required. Locations adjacent to sensitive uses will receive consideration for a bus bench despite lower than normal boarding counts. Sensitive uses are the following:

- Schools
- Hospitals
- Senior Citizen Activity Center
- Rehabilitation Centers
- Social Service Agencies
- Medical Facilities

Finally, existing bench locations with a defective or vandalized bench will receive priority for a replacement bus bench provided the above criteria are met. Benches may as well be placed or installed privately by businesses, neighborhood associations, property owners, etc, and are not the responsibility of the City or DDOT.

**3. BUS STOP SHELTERS**

It is DDOT policy to place bus shelters only at locations which have greater than 75 boardings per day subject to the following constraints.

1. The shelter must be able to be safety sited.
2. The location and site plan must receive the approval of the participating municipality and the other governing authorities as required.

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Bus shelters offer greater protection for waiting passengers and offer space for the transmission of more detailed information concerning routes (e.g., maps and schedules in most cases) to the public. As with bus stop benches, “sensitive” users will receive consideration for a bus shelter despite lower than normal boarding. Existing locations with vandalized, defective, or destroyed bus shelters will receive priority for a new bus Shelter, unless the site is determined to be a “location of habitual vandalism or damage”.

**4. BUS STOP PLACEMENT**

**a. “SIGNALIZED INTERSECTIONS”**

Current practice at all intersections is to locate bus stops on the far-side. Generally, the far-side stop is more convenient for transfer passengers where applicable.

**b. “UNSIGNALIZED INTERSECTIONS”**

At unsignalized intersections, far-side stops are preferred for safety reasons. Far-side stops should be located no closer than approximately 80 feet from the intersection to allow for adequate space to prevent automobiles from backing into the intersection.

If far-side stops are not possible, bus stops should be located mid-block or near-side. In placing these signs, special care should be taken to locate the stops far enough back from the cross street to preserve cross and parallel traffic sight distances and allow traffic traveling parallel to the bus route an unobstructed view of the intersection and traffic control signs, if present.

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**c. LEFT- TURNING BUSES**

At locations where buses make a left turn at an intersection, bus stops are generally located either (1) mid block or sufficiently near-side to allow the bus to access the left turn lane or (2) sufficiently far-side after the turn to allow the bus to pull straight along the curb after the turn. The choice is usually dependent on opportunity to consolidate stops for multiple routes, thereby assisting transfer passengers and minimizing costs.

**d. RIGHT – TURNING BUSES**

At locations where buses are making a right turn, a stop can be made either near-side or far-side depending on the opportunities for other routes to share the stop, whether transfer convenience will be enhanced, and the geometry of the intersection. As noted above, near-side stops are preferred at signalized intersections. Near-side stops should be located at distances no closer than 20 feet from the intersection to allow for “squared off” bus turns. Far- side stop locations should provide enough distance for the bus to pull straight to the curb following the turn.

**e. PASSENGER BOARDING AND ALIGHTING**

It is DDOT policy to place bus stops along raised curb areas with sidewalks, when possible, provided other criterion is met. This provides passengers with

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safe and convenient boarding-and alighting. Stop placement should avoid vehicle doors opening in close proximity to catch basins, newspaper stands, and other such pedestrian hazards.

**f. “GOOD NEIGHBOR” POLICY**

It is DDOT policy to place bus stops in locations that minimize conflict with adjacent residences and businesses. Whenever possible, and within the above criteria, stops should be located in unused areas along property lines, as opposed to near building doors and windows. These stops should also avoid blocking private signs. A location which places a barrier such as a fence between the stop and adjacent buildings, especially residences, is preferred, assuming passenger access is reasonable. In addition, stop locations should avoid interference with driveways.

**g. TEMPORARY STOPS**

In locations where bus stops are likely to remain for less than six months, considerations may be given to the placement of temporary stops. When considering a location for a temporary stop, a number of factors should be evaluated, including all criteria for temporary stops at a given location (e.g., rerouting due to detours, construction, special events and new developments of provisional service, etc.). Among these factors is the likelihood that a temporary sign will be vandalized, stolen, or relocated improperly during the installation period.

**h. BICYCLES ON BUSES**

The Detroit Department of Transportation (DDOT) has expanded its service options for our customers, and joining the 100+ U.S. transit agencies that provide bicycle-on-

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bus or bicycle-on-rail services. With the support of federal funding, DDOT has outfitted the entire fleet with bicycle racks. All transit vehicles in revenue service will have bicycle racks available for use.

Bicycle services offered by DDOT are designed to benefit its patrons by expanding service coverage, providing more transit options for the riding public while ensuring access for non-motorize modes of transportation. The Bicycles and Transit Policy will serve to assist staff, passengers and equipment operators in navigating their rights and responsibilities with clarity.

**g. Bicycle Service Delivery**

The bicycle racks are available on a first-come, first-served basis. If a bus arrives and the bicycle rack is full to capacity, the cyclist must wait for the next bus.

Bicycles must fit in rack, not have trailers or other additions that prevent the bicycle from fitting in the rack securely. If a bicycle blocks the operator's field of vision so that they cannot operate the bus safely, they are to instruct the customer to remove the bicycle and refer them to the published policies on acceptable bicycle types.

Operators are not responsible for loading or unloading bicycles; this is the sole responsibility of the rider and is a prerequisite for usage of DDOT bicycle racks.

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## **VI. NEW SERVICE PRIORITIZATION**

DDOT is taking steps to build a customer-focused transportation system. New service requests from constituents, as well as from staff, foster a need to structure an order of priority. The standards used in adding new service to the system within allocated resources are as follows:

- **SERVICE TO CAPITAL FACILITIES:** The completion of a new capital facility will warrant the provision of an adequate level of service to maximize the facility's chance for success as well as providing access for DDOT's passengers.
- **AUGMENTATION:** The addition of revenue hours of service to existing routes that are experiencing enough ridership growth to exceed available capacity is essential in order to take care of current riders and encourage their continued patronage.
- **ROUTE RESTRUCTURING/EXTENSIONS:** The restructuring of routes to improve system connectivity and service quality enhance the ease and the utility of using the system for existing and potential new riders is DDOT's utmost importance. Restructuring of routes is a quality measure that assures that DDOT meets the needs of current riders as travel need or demands change and that density or travel destination changes.
- **NEW SERVICE:** The provision of transit service to areas currently without service is an activity necessary to continue to grow the system. This includes the addition of Saturday and/ or Sunday service on routes that currently operate on weekdays, employment centers (number of employees), retail centers (Square footage), New School openings and major transfer centers outside of Detroit proper. DDOT's projected goals for rapid transit improvements to develop rail service along major corridors will foster the planning and development of a new bus feeder system.

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These rapid transit improvements offer an opportunity to enhance mobility, increase transportation options and to improve the environment.

DDOT is required to perform two different analyses on all existing routes and on all potential projects. One analysis requires the evaluation of routes that are in the 4<sup>th</sup> quartile on a comparative ranking basis, while the other analysis provides an absolute level of performance. Both evaluations can be done for the entire system, as a whole, or for groups of routes having specific needs where resources should be dedicated for the near future.

- **DENSITY MODELING SPLIT FOR SERVICE:** DDOT will identify an appropriate number of Census tract or traffic analysis zones or residential communities that represent a cross-section of the transit population. A dimension of new service prioritization in this standard should include Census tract or traffic analysis zones or residential communities where minority and/or low-income residents are predominant. Therefore, DDOT will identify the most frequently traveled destinations for patrons needing or using DDOT's services. For each of the most frequently traveled destinations, DDOT will compare the average peak hour travel time to destination, average non-peak hour travel time to destination, number of transfer required to reach the destination for people beginning the trip in the selected Census tract or traffic analysis zones.
  
- **GUARANTEED TRANSIT SERVICE BY DENSITY:** Census tract information or traffic analysis zones transit services will be provided in accordance with travel demands or travel patterns driven by the average density and the excess of the average density. Service will be planned and scheduled as follows:
  1. All Census tract density areas will be provided transit service to the Central Business District (CBD) for system transfer.
  2. Density area transit service will be provided transfer for suburban travel.

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3. Excess density area will provided direct service for urban and suburban travel.
4. Excess density areas will be provided frequent transit services in relation to their population per square mile.

**Population Density Modeling Service Delivery Split**

<b><u>Service Areas</u></b>	<b><u>Pop Density</u></b>	<b><u>Modeling Service Delivery split</u></b>
<b>CBD</b>	<b>10,000 +</b>	<b>full service + system transfers</b>
<b>Suburban Communities'</b>	<b>7,801 – 10,000</b>	<b>full service + system transfers</b>
<b>Residential Communities'</b>	<b>5,201 - 7,800</b>	<b>identify most frequent traveled destinations for patrons Needing or using DDOT Services</b>
<b>Minority and /or Low income Residents</b>	<b>2,201 – 5,200</b>	<b>services provided in accordance with compared averaged peak and non – peak hour travel time to required destinations</b>
<b>Residential Communities'</b>	<b>1,001 – 2,600</b>	<b>service augmentation will be used to implement service</b>
<b>Communities'</b>	<b>0 – 1,000</b>	<b>service augmentations will be used to implement service.</b>



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## **VII. SERVICE PLANNING PROCESS**

The Detroit Department of Transportation regularly evaluates the performance of its services through the service planning process. The primary objective of the service planning process is to ensure that DDOT uses available resources in the most effective manner by developing strategies to improve performance and/or to relocate service within the system.

### **Bus Service Planning Process**

The bus service planning process takes place at two levels. One is the on-going evaluation and implementation of incremental service changes that occur on a quarterly basis. The other is a two-year planning cycle for development of the triennial service plan, which can include major restructuring of existing bus routes and proposals for new bus service.

The data used for all service evaluation are collected on a regular basis through various means to track and evaluate the performance of services against each of the service standards as set forth in this document.

The primary differences in the process used for developing on-going service planning and the triennial service plan include:

- The magnitude of the service changes considered (minor or major)
- The extent and type of analysis used;
- The level of public participation; and
- Whether the efforts is incremental or comprehensive in nature.

**Minor changes to bus service are made through the on-going planning process and can be implemented with existing equipment, within the adopted budget, and without adversely affecting route or service delivery.**

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With the exception of new service associated with a major capital investment minor changes that can be implemented with existing equipment and within the adopted budget are as follows:

- Running time adjustments
- Departure time adjustments
- Headway changes to match ridership and service levels (provided the frequency and loading standards are still met)
- Changes to bus stop locations
- Alignment changes
- Span of service changes within one (1) hour or less
- Route extensions of one (1) mile or less
- Route variation modifications

***A major service change to bus or rail system is defined as the addition of, or reduction in, more than twenty five percent (25%) of the bus system's riders or vehicle revenue hours through one or more route changes that would remain in effect in excess of one hundred eighty (180) days***

**Major changes are ones that will have an adverse effect on riders, resource requirements, route structure, service delivery or change in service of 25% or more of the number of transit route miles of a route; or 25% or more of the number of transit revenue vehicles miles of a route computed on a daily basis for the day of the week for which the change is made (as set forth in this document). These changes are evaluated and implemented only through development of the triennial service plan.**

Major changes that will have an adverse affect on resources and may potentially have an adverse affect on riders are as follows:

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- Major service restructuring
- Implementation of new routes or services
- Elimination of a route or service
- Elimination of part of a route
- Span of service changes greater than one (1) hour
- 25% or more of the number of transit route miles of a route; or 25% or more of the number of transit revenue vehicles of a computed on a daily basis for the day of the week for which the change is made.

**The On-going Bus Service Planning Process:** the service changes that are evaluated in the on-going service planning process can be initiated in a variety of ways. These include but are not limited to:

- Service request and/or complaints from the public;
- Feedback from DDOT Operations and Maintenance staff, such as drivers, garage superintendents or schedule makers;
- Proposals made by DDOT Service Planning staff; and
- Studies completed by the City, the local MPO, by other regional entities, or by municipalities.

Service Planning staff screen all potential service changes to determine whether they are minor or major. In addition, each potential change is considered using the criteria listed below (not all criteria are necessarily used in each evaluation).

- Performance measures against the Service Standards
- The rationale for the change
- Net cost per new passenger
- Changes in ridership
- Changes in travel time for existing riders
- Changes in operating costs

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- Changes in fare revenue
- Key characteristics and demographics of the market
- Contribution to the achievement of external mandates, such as Title VI
- Other factors, as appropriate

Proposed minor changes that have been analyzed by the Service Planning Division are presented to the executive staff, which is chaired by the DDOT Director and includes representatives of the following areas:

- Strategic Planning
- Bus Operations
- Bus Maintenance
- Operations Support
- Customer Service
- Administration
- Accounting/Budgeting
- Management Information Systems
- Marketing
- Other Divisions or Units, as appropriate

Minor changes that are approved by the Executive Staff, and can be made within the adopted budget, are implemented as soon as possible-usually in the next quarterly schedule change.

**The Triennial Service Plan Process:** Every three years, DDOT develops a Triennial Service Plan that describes the performance of the system and the services that will be operated in the upcoming three years. The Plan encompasses all fixed-route services and includes:

- A description of the performance of existing services;
- Recommendations for major service changes;

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- A discussion of service changes that were considered and/or evaluated, but were not recommended at the time; and
- A general review of the effectiveness of previous major service changes (major service changes would not be reported on in the service planning cycle immediately after their implementation, but would be evaluated in the following planning cycle to allow time for ridership to build).
- As with the On-Going Service Planning Process, a major goal in the development of the five year and triennial service plan is to ensure that DDOT uses available funds in the most effective manner. However, this planning process can also identify major service changes and enhancements that have merit, but cannot be funded within the existing operating budget. In such cases, the need for additional operating funds can be identified for request, and the service can be implemented when sufficient resources become available.

A key component of the triennial service planning process is an evaluation of the performance of existing services, as measured using the service standards. Based on this analysis, the Service Planning Unit proposes major service changes that will improve the performance of services that fail any of the Service Standards. (Minor service changes may also be identified at this time; however, they may be implemented as soon as possible, rather than waiting for the full acceptance of the Service Plan.)

Service changes considered in the Triennial Service Plan can also be proposed through the same avenues as those considered in the On-Going Service Planning Process. Indeed, many may be identified through the on-going screening of projects. In addition, public input for the Triennial Service Plan is sought via public meetings and public hearings.

A key component of the Triennial Service Planning Process is an evaluation of the performance of existing services, as measured using the Service Standards. Based on this analysis, the Service Planning Unit proposes major service changes that will

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improve the performance of services that fail any of the Service Standards. (Minor service changes may also be identified at this time; however, they may be implemented as soon as possible, rather than waiting for the full acceptance of the Service Plan.) Service changes considered in the Triennial Service Plan can also be proposed through all of the same avenues as those considered in the On-Going Service Planning Process. Indeed, many may be identified through the on-going screening of projects. In addition, public input for the Triennial Service Plan is sought through public meeting and public hearings.

During development of the Triennial Service Plan, potential major changes are evaluated through a comparative evaluation to determine which represent the best allocation of available resources. To complete the comparative evaluation, the Service Planning Unit creates a list of all proposed service increases and reductions. The proposed service increases are ranked using the net cost per passenger: those that garner the most new passengers at the lowest incremental cost are ranked highest priority for implementation. The proposed service reductions are ranked using the net savings per lost passenger: Those that save the most money with the lowest loss of passengers are ranked highest priority for implementation.

Other evaluation criteria are also used in the comparative evaluation, as appropriate, to determine the rank of service change proposals. For example, higher priority would be given to a proposed change that improved a route's performance on one or more of the service standards.

After the rankings are completed, the savings from the major service reductions are compared to the cost of major service enhancements to help select the proposed service changes. The goal is to maximize ridership and service performance in a cost-effective manner. The recommendations that result from this process are reviewed by the Executive Staff to assess the feasibility of implementation before they are included in the Preliminary Service Plan. Each Preliminary Service Plan is made available to the

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public for review and comment. A list of the final recommendations, an indication of the routes that still violate one or more of the service standards, and the Title VI analysis, are then submitted to DDOT Executive Staff for final approval before the changes are implemented.

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## **VIII. Data Collection Program**

DDOT Data Collection and Service Monitoring Unit are responsible for collecting data for input into the service planning and service standards process. This data is used to monitor schedule adherence and passenger load factors. The data gathering consists of full weekday ride checks, Saturday and Sunday running time checks, point checks, maximum load checks and pulsing checks. The following program shall be implemented for the data collection activities:

- Full weekday ride checks will be conducted on all routes twice each year. This semi-annual program will alternate seasons in changing years (e.g., one year Spring and Winter seasons will be checked and the next year Summer and Fall will be checked).
- Full weekday, Saturday and Sunday ride checks will be conducted as needed on routes that have problematic on-time performance or overloads.
- Points checks will be conducted as needed on all limited or express routes.
- Approximately 550 trip checks will be conducted annually for data required for the National Transit Database/Section 15 report.
- Follow-up and as needed point and route segment diagnostics with running time and point checks will be performed throughout the year.
- Pulsing checks, boarding and alighting activity and pulsing effectiveness reviews will be conducted on a triennial basis.



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**Service Monitoring and Ridership Data Reporting**

Ridership data is available through the following sources: automatic passenger counters (APC), manual ride checks, manual point checks, and GFI automated fare collection system reports.

The bus service assessment will identify those routes that are failing based on the service standards or declining trends and need further evaluation. A report of these results will be produced on a semi-annual basis, within 30 days of the end of the six-month period. Any recommendations for major service modification or total route elimination will follow the public hearing and the approval process mandated by the DDOT policies described within these service standards. A route will be determined unproductive if for two consecutive quarters, its annual average passengers per revenue trip is 50% or less than the average for similar existing service, its annual average passengers per revenue mile is 50% or less than the average for existing service, and its annual average cost per passenger is 150% or greater than the average for similar existing service.

These measures will be calculated separately for local, feeder, semi-express, express and special vehicle services. Routes that are within the standards but are considered as near failing (worse than 40% of similar service average) will be placed on a 'watch list' and prioritized for further analysis and improvement.

**Example of Methodology**-The performance measures discussed under route productivity are calculated for the system and then organized by type of service. If a route is categorized as a 'local' route it will be compared against the average result of the other 'local' routes.

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**Passengers per Revenue Trip**

Service Average.....33.92 Passengers per Revenue Trip

Service Benchmark.....16.96 (50% of Average)

Service 'Watch List'.....13.57 (40% of Average)

Route A.....13.02: FAIL

Route B.....13.57: WATCH LIST

Route C.....23.90: PASS

Figure 1

Service Information

Route	7	Bench	Watch	Watch	Fail	Pass/ <u>Fail</u>
Collected		50%	=/>40%	Further	Ridership	<u>Ridership</u>
Ridership	Data	System	System	Sampling	< 40% of	<u>\$/Pass =</u>
Sample Average		Average	Average	Needed	Trend	<u>150%or &gt;</u>
Weekday						
Pass/Hr.	19.04	18.60	17.37	NO	14.48	PASS
Pass/MI	1.44	2.31	1.38	NO	1.15	PASS
<b>Pass/Trip</b>	<b>33.26</b>	<b>16.96</b>	<b>13.57</b>	<b>NO</b>	<b>NO</b>	<b>PASS</b>
\$/Pass	\$2.31	\$1.14	\$1.60	WATCH	\$1.72	FAIL
Farebox	24.1%	39.1%	23.5%	NO	19.6%	PASS

- From this assessment and subsequent analyses, proposals will be generated for consideration for service modification to increase productivity and efficiency for both the passengers and the Department of Transportation. If a route is found unproductive and extenuating circumstances do not exist, a strategy that may

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include a schedule change and other corrective action will be developed. The strategy may include a multiple of the following:

- Community input;
- Increased marketing;
- Route modification;
- Change of service frequency;
- Change in hours of service;
- Change in the days that service is provided; or
- Removal of nonproductive trips or segments.

The new strategy will be monitored for six months to allow new and existing passenger ridership patterns to develop. If implementation of the strategy fails to improve a route's performance, staff may create a new strategy, allowing an additional six months to establish improved ridership.

If reasonable measures do not result in the route meeting established standards within the scheduled time, staff will request permission from the proper authorities to hold a public hearing to gather input regarding the proposed elimination of the route or route segment.

### **Factors Affecting Service Modification Implementation**

- A. Evaluation or resource availability for expected service modifications or additions.
  - Budgeted operating expenses: Proposed service modifications must be identified within the established fiscal year work plan for operation of service for that year.

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- Proposed new service that will incur additional costs outside of the work plan can be implemented if one of the following applies:
  - Modifications are implemented in conjunction with a service reduction or elimination, or another route;
  - Resource allocation per scheduling adjustment; or elimination, or another route;
  - Unless otherwise approved by the proper authorities.
  
- Operational factors that will be considered for any service include:
  - Comparable farebox recovery for similar service.
  - Resource availability.
  - Any increase in financial resource requirements for affected internal DDOT divisions.

**B. Evaluation of requested service changes**

**All Service Modifications**

- Vehicle Availability: Any new services requiring additional peak vehicles that would result in an unacceptable reduction in “spares-to peak scheduled vehicle” ratio (20%), would not be implemented until (a) fleet size is expanded, or (b) service modifications on existing routes reduce peak vehicle requirements sufficiently to accommodate any such new services.
- Vehicle Storage and Serving Capacity: If proposed new services require acquisition of additional vehicles and existing storage/service facilities are at capacity, no new services will be implemented until storage/service facilities are constructed and/or acquired.

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- Assurance of Service Equity: Recommendations for change involving the elimination or addition of service will be reviewed to avoid the disparate distribution of “benefits and burdens” of service provision due to such proposals. This will maintain comparable service levels to areas identified as having a concentration of protected population segments, particularly minority and low-income. The threshold used by DDOT to determine a census tract as sensitive to service equity from a minority standpoint is the service area average of minority population by census tract as prescribed by Title VI of the Civil Rights Act of 1964.
  
- Vehicle/Operator Availability: Adequate budget, equipment and qualified operators/drivers must be available to provide the proposed service.

## **2. Request for New Service**

- Public Input: Any service requests for new bus service from a resident or a community where the request for service is supported by community organizations, a majority of the residents or political representatives of the area will be considered and evaluated.
  
- Potential Ridership: The proposed new route generates sufficient ridership to produce a farebox recovery ratio comparable to that for similar existing service.
  
- Level of Development: The number and square footage of major office and retail development in the request area should be at a level comparable to similar areas where regular services are currently provided.

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Special consideration may be given to areas with established Transportation Management Associations (TMA) or Community Improvement Districts (CID) for new, supplemental or circulator services. (TMA) or Community Improvement Districts (CID) for new, supplemental or circulator services.

- Demonstration Status: Any new bus route or innovative service, such as small vehicle (trolley) or shuttle services that have received public input may be designated by the proper authorities as a demonstration project. This demonstration period may extend for a period up to one year from the first date of service on the new route or innovative service. During the demonstration period, the proper authorities may choose to change the new route or innovative service after notification to the existing passenger base. Any bus route or innovative service being considered as a “demonstration project” shall be identified as such on the public timetable.

Monitoring of service that is classified as demonstration will take place monthly for the first three months through manual data collection efforts. The frequency of checks will be reduced to quarterly for the remainder of the demonstration period. However, any major change to the service within this time will require three monthly checks and three subsequent quarterly checks.

### **3. Request for Additions/Deletions to Existing Service**

- Additional Trips-The following factors shall be considered for implementation of additional trips on existing routes:
  - a) Vehicle loads will not exceed the maximum load factor per the service standards.

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- b) Maintaining level of service (i.e., service frequency) while expanding service coverage.
  - c) Other transit service available in the area that could reasonably satisfy the specified need.
  - d) The provision of connections with the first or last bus with the current first/last trip.
- Modification of Existing Routes (Rerouting)-The following factors shall be considered for modification of existing routes.
    - a) Vehicle loads of trips close (in time) to the requested service.
    - b) Availability of other transit services within 1, 500 feet or ¼ mile of the area of request.
    - c) The number of passengers that would be denied service because of the rerouting.
    - d) Potential for generating additional trips.
    - e) Impact on schedule adherence.
    - f) Directness of routing to minimize through-trip delays
- Requests for Removal of Trips - The following factors shall be considered for removal of trips from existing routes:
    - a) Vehicle loads below the minimum load factor per the service standards.

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b) The number of passengers that would be denied service.

c) Availability of other transit service in the area that could reasonably satisfy the specified need.

d) Historical significance of the route

e) Fare recovery rate

f) Community consensus

- **Public Involvement-** The involvement of the public/private sector shall be considered where feasible and such considerations shall be documented.
- **Public Hearing Requirements-**The Urban Mass Transportation Act of 1964 as amended requires that recipients of federal financial assistance establish a local process to receive and consider public comment prior to fare changes and major service reductions.



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**IX. DETERMINATION OF DISPROPORTIONATE IMPACT ON MINORITY  
AND LOW INCOME RIDERS AND ACTIONS TO MITIGATE**

**IMPACT DETERMINATION**

**DDOT Fares**

*Choose options that you would be more likely to support. If there are none that you would likely support, make no selection.*

- Regular Boarding Charges
- Peak Period Charges
- Express Boarding Charges
- Other Boarding Charges
- Weekly Bus Pass
- Transfer Duration
- Transfer Discounts
- Monthly Bus Pass
- Regional Bus Pass

**DDOT Service Changes**

*Choose options that you would be more likely to support. If there are none that you would likely support, make no selection. See proposed DDOT service changed.*

- Increase time between buses or eliminate trips for select lines and routes (savings)
- Eliminate select routes or route segment (savings)
- Eliminate select lines (savings)
- Restructure service on select routes and lines (savings)
- Eliminate overlap with local service (savings)
- Reduce service on holidays: (choose number and give savings)
- Reduce seasonal service to bring it in line with actual service needs for the day after Thanksgiving and the week between Christmas and New Years Day.
- Reduce Weekend late night service (savings)
- Reduce Christmas/New Years seasonal service (savings)
- Reduce bus Stops on select lines (savings)

**Demographic Information**

*Please tell us where you live. This information will help DDOT's Administration distinguish residents' fare and service preference along with the equity distributions as well.*

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**I live in**

Detroit Proper: East Side – North Side – South Side – West Side

Downtown

Central Business District (CBD)

Suburban Detroit (specify) \_\_\_\_\_

Other (specify) \_\_\_\_\_

**Voluntary Title VI Public Involvement Survey**

*Title VI of the Civil Rights Act of 1964 prohibits discrimination on the basis of race, color, and national origin in programs and activities receiving federal financial assistance. The Detroit Department of Transportation (DDOT) is required to ensure that all segments of the population have full and fair participation in transportation decision making.*

*To help with this, we ask that you voluntarily provide us with information regarding your race/ethnicity and household income. Any information you disclose is confidential and is intended solely for the use of allowing DDOT to gather data which will allow us to monitor our compliance with federal nondiscrimination laws.*

**What is your estimated TOTAL HOUSEHOLD INCOME in 2011 before taxes?**

\$10,000 - \$20,000

\$20,001 - \$40,000

\$40,001 - \$80,000

More than \$80,000

**What is your RACE / ETHNICITY?**

Asian

Black/African American

Hispanic

Native American/American Indian

White

Other (please specify)

*Thanks you for taking the time to express your preference on balancing DDOT's Budget requirements. DDOT's Administration will take your input into account in preparing its Planning decisions for the proposed changes.*

**MITIGATION**

A transit agency or a recipient of federal funds can implement a major service reduction or fare increase that would have a disproportionate high and adverse effect provided

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that it is demonstrated that the action meets a substantial need that is in the public interest and that alternatives would have more severe adverse effects than preferred alternatives.

All analysis must show that the approved changes are of a last resort for balancing the budget after consideration of various alternatives. In addition, this analysis must show that DDOT took other actions to close the budget gap such as a reduction in force, moving money from the capital budget over the operating budget, and most importantly, maintaining DDOT's current service levels.

DDOT's implementation strategies for the proposed changes to fares and service include a high level of public outreach in advance of making the changes in order to gather public feedback and input. Ads should be run in the ethnic press, both paper and online. Send press releases to radio, TV and newspapers. Placards advertising the hearing should be posted on buses in English Arabic and Spanish. An abbreviated "Notice of Public Hearing" should be translated into Spanish and Arabic and a detail "Notice of Public Hearing" are to be translated into the respective languages. Notices are to be provided to community organizations located in areas with high concentrations of limited English speakers. Language assistance, both translated documents and interpreters, are made available at the public hearings.

**Route Productivity** is based on current ridership information and the performance measures of 1) Average passengers per revenue hour and 2) Average cost per passenger, to determine productivity by route during weekday, Saturday, and Sunday service. The results will be compared against similar service types based on the evaluation methodology outlined in the service evaluation and modification process.

### **Service Evaluation and Modification Process**

Methodology: A route will be determined as deficient if, for two consecutive quarters, its annual average passenger per revenue trip is 50% or less than the average for similar existing service and its annual average cost per passenger is 150% or greater than the average for similar existing service. These measures will be calculated separately for mainline, local, feeder, semi-express and small vehicle services (e.g., trolleys).

Following assessment and subsequent analysis, proposals will be submitted for consideration for service modification to increase productivity and efficiency for both the passengers and DDOT. If a route is found deficient and extenuating circumstances do not exist, a strategy will be developed which may include a schedule change and other corrective actions. The strategy to include targeted marketing will be evaluated for six months to permit new and existing passenger ridership patterns to develop. If implementation of the strategy fails to improve a route's performance, staff may create a new strategy, allowing an additional six months to establish improved ridership.

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If reasonable measures do not result in the route meeting established standards within the scheduled time, staff will hold a public hearing to gather input regarding the proposed elimination of the route or route segment.

Factors affecting service modification implementation include (1) evaluation of budget availability for expected service modifications or additions; (2) evaluation of requested service changes including deletion, modification, or new service, and (3) results of the public involvement process.

***A major service change to bus or rail system is defined as the addition of, or reduction in, more than twenty five percent (25%) of the bus system's riders or vehicle revenue hours through one or more route changes that would remain in effect in excess of one hundred eighty (180) days***

**Major changes are ones that will have an adverse effect on riders, resource requirements, route structure, service delivery or change in service of 25% or more of the number of transit route miles of a route; or 25% or more of the number of transit revenue vehicles miles of a route computed on a daily basis for the day of the week for which the change is made (as set forth in this document). These changes are evaluated and implemented only through development of the triennial service plan.**

Major changes that will have an adverse affect on resources and may potentially have an adverse affect on riders are as follows:

- Major service restructuring
- Implementation of new routes or services
- Elimination of a route or service
- Elimination of part of a route
- Span of service changes greater than one (1) hour
- 25% or more of the number of transit route miles of a route; or 25% or more of the number of transit revenue vehicles of a computed on a daily basis for the day of the week for which the change is made.

Public Hearings are required as follows:

- Prior to raising fares or implementing a major reduction of transit services. (Federal Transit Act. Section 9 (e) (3) (H)).
- If there is a reduction in service of 25% or more of the number of transit route miles of a route; or 25% or more of the number of transit revenue vehicles miles of a route computed on a daily basis for the day of the week for which the change is made.
- When a new transit route is established.

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- Before eliminating an existing transit route.
- Prior to any application for a grant or loan under the Federal Transit Act to finance the acquisition, construction, reconstruction, or improvement of facilities or equipment which will substantially affect a community or its mass transportation service, DDOT shall afford an adequate opportunity for a public hearing, pursuant to adequate public notice, and hold such hearing unless no one with a significant economic, social, or environmental interest in the matter requests a hearing. (Federal Transit Act. Section 3 (d) (1))

Exemptions to the requirement are:

- If reduced or free promotional fares are instituted on a daily basis or periodically within a period of 180 days.
- If an emergency situation occurs, a service change may be implemented immediately. Examples of emergency service changes include but are not limited to those made because of a power failure for a fixed-guide way system, the collapse of a bridge over which bus routes pass, major road or rail construction of inadequate supplies of fuel, etc.
- Experimental service changes instituted for 180 days, or less.
- For headway adjustments of up to ten (10) minutes during peak hour service; and up to twenty (20) minutes during non-peak hour service.
- Standard seasonal variations are exempt unless the number, timing or types of standard seasonal variation change.

An accurate stenographic transcription or tape recording will be made of each public hearing. Public hearings will be held at facilities convenient to the affected customers and accessible to the disabled.

### **Adverse Effect for Impact Determination**

**Major Service Change Policy:** A service equity analysis will be conducted whenever DDOT implements a major service change to the bus or rail system as define in this policy. A major service change to bus or rail system is defined as the addition of, or reduction in, more than twenty five percent (25%) of the bus system's riders or vehicle revenue hours through one or more route changes that would remain in effect in excess of one hundred eighty (180) days.

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**Disparate Impact Policy:** A major service change to the bus or rail system will be deemed to have a disparate impact on minority populations for high and adverse effect on minority populations is being practice as the percentage being greater than twenty five percent (25%) of riders or vehicle hours on above-non-minority-classified routes affected by the major service change.

**Disproportionately Burden Policy:** A major service change to the bus or rail system will be deemed to have a disproportionate burden for high and adverse effect on low-income populations is being practice as the percentage being greater than twenty five percent (25%) of riders or vehicle revenue hours on above –poverty-level classified routes affected by the major service change.

In any case of changes when there is an effect of greater than twenty five percent (25%) changes are not approved or implemented without a Service Equity Analysis \ Evaluation. The widespread nature of the Minority and Low Income populations in the City of Detroit, lends itself to the situation where a majority of the service tract(s) associated with DDOT’s routes are Minority and Low Income.

### **Fare Equity Analysis \ Evaluation**

**Fare Change:** A fare equity analysis \ evaluation will be conducted whenever DDOT implements a fare change, regardless of the amount of increase or decrease, except for those fare changes mandated by Federal, State or Local law.

A. fare change is define as an increase or decrease in fares: (a) on the entire system, (b) on certain transit modes, or (c) by fare payment type of or fare media.

The exceptions are as follows:

- “Dump the pump or spare the air days” or other instances when a local municipality or DDOT has declared that all passengers ride free;
- Temporary fare reductions that are mitigating measures for other actions (i.e. construction activities that close a segment of the bus or rail system); or
- Promotional fare reductions that last less than one hundred eighty (180) days.

**B. Disparate Impact Policy:** A fare change will be deemed to have a disparate impact on minority populations if its implementation results in either:

- When one (1) fare change is proposed, the percentage of impacts of the proposed fare change borne by minority riders as a result of the proposed fare change is at least twenty five percentage points (25%) higher than the percentage of impacts of that proposed fare change on the overall rider population; or
- When one or more than one (1) fare change is proposed:
  - a. For each fare change in the package:: the percentage of impact of each individual proposed fare change borne by minority riders as a result of the

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proposed fare change is at least twenty five percentage points (25%) higher than the percentage of impacts of that proposed fare change on the overall rider population; and

b. For the total package of fare changes : the aggregate percentage of impacts for the proposed fare changes borne by minority riders as a result of the proposed fare changes is at least twenty five percentage points (25%) higher than the aggregate percentage of impacts on the overall rider population.

**C. Disproportionate Burden Policy:** A fare change will be deemed to have a disproportionate burden on low-income populations if its implementation results in either:

1 When one (1) fare change is proposed, the percentage of impacts of the proposed fare change borne by low-income riders as a result of the proposed fare change is at least twenty five percentage points (25%) higher than the percentage of impacts of that proposed fare change on the overall rider population; or

2 When more than one (1) fare change is proposed:

a. For each fare change in the package: the percentage of impacts of a single proposed fare change borne by low-income riders as a result of the proposed fare change is at least twenty five percentage points (25%) higher than the percentage of impacts of that proposed fare change on the overall rider population; and

b. For the total package of fare changes: the aggregate percentage of impacts for the proposed fare changes borne by low-income riders as a result of the proposed fare changes is at least twenty five (25%) greater than the aggregate percentage of impacts on the overall rider population.

**When a Major Service or Fare Change is Deemed to Have a Disparate Impact and/or Disproportionate Burden**

A. Avoid, Minimize, or Mitigate impact and/or Burden: If a proposed major service change or fare change is deemed to have a disparate impact and/or disproportionate burden, DDOT shall consider modifying the proposed changes in order to avoid, minimize or mitigate the disparate impact(s) or disproportionate burden (s) of the proposed change. Any modifications to the proposed change must be reanalyzed according to the disparate impacts and /or disproportionate burdens of the change.

B. No Alterations or unable to Remove Impact and /or Burden: If DDOT chooses not to alter the proposed major service or fare change, or if modifications to the proposed major service or fare change do not remove the disparate impact (s) or disproportionate burden(s), the following steps must be taken:

1. If DDOT chooses not to alter the proposed major service or fare change, or if modifications to the proposed major service change or fare change do not remove the disparate impact, DDOT may implement the major service or fare change only if:

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- a. DDOT has a substantial legitimate justification for the proposed service or fare change, and
  - b. DDOT can show that there are no alternatives that would have a smaller disparate impact on minority riders that would still accomplish DDOT's legitimate program goals.
2. If DDOT chooses not to alter the proposed major service change or fare change, or if modifications to the proposed major service change or fare change do not remove the disproportionate burden on low-income riders:
- a. DDOT shall take steps to avoid, minimize, or mitigate those impacts where practicable, and
  - b. DDOT should describe alternative service and/or fares available to low income customers.

**Conclusions**

The Equity Analysis \ Evaluation submitted must show that passenger fares, route, hours of service, and other changes include all public comments. The customer evaluation that has been noted or recorded must be illustrated in the final report for Board and management decisions; as the justification for policy compliance; addressing the adverse effect for impact determination for all approved changes.

**ENVIRONMENTAL JUSTICE; CIRCULAR 4703.1**

**Federal Register / Vol. 77, No. 137 / Tuesday, July 17, 2012 / Notices**

The Federal Transit Administration (FTA) has placed in the docket and on its Web site, final guidance in the form of a Circular (hereinafter "EJ Circular") on incorporating environmental justice principles into plans, projects, and activities that receive funding from FTA. This final guidance provides recommendations to State Departments of Transportation, Metropolitan Planning Organizations, public transportation providers, and other recipients of FTA funds on how to fully engage environmental justice populations in the public transportation decision-making process; how to determine whether environmental justice populations would be subjected to disproportionately high and adverse human health or environmental effects as a result of a transportation plan, project, or activity; and how to avoid, minimize, or mitigate these effects. The effective date of the Circular is August 15, 2012.



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## **X. Reliability Service Standards**

The on-time performance of service is affected by many variables, including traffic congestion, accidents, weather, road/track conditions, infrastructure maintenance work, vehicle failures, etc. The Schedule Adherence Standards provide ways of measuring how reliably services adhere to the published schedules. If a service does not pass the Schedule Adherence Standards, the DDOT will determine why it does not perform reliably and will take action to correct the problems. In terms of service planning, this may mean adjusting running times, changing headways, etc.

- **Schedule Adherence**

Schedule Adherence Standards provide the tools for evaluating the on-time performance of the individual DDOT routes/services. The Schedule Adherence Standards also vary based on frequency of service: Passengers using high-frequency services are generally more interested in regular, even headways than in strict adherence to published timetables: whereas, on less frequent services, passengers expect arrival/departures to occur as published.

- **Bus Schedule Adherence Standards**

The environment in which buses operate makes it difficult to provide bus service with the same degree of precision that is possible for some other modes. Therefore, the Schedule Adherence Standards for bus routes are designed to ensure that routes operate as reliably as possible-given their uncertain environment-without early departures, chronic delays, or unpredictable wait and/or travel times.

The Bus Schedule Adherence Standards establish two separate thresholds to measure on-time performance. The first measures the on-time performance of each trip on the route. The second measures the on-time performance of the

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route itself, based on the percent of trips throughout the day that operates on-time.

1. **Bus Trip Test:** To determine whether individual trips on a route are on-time, DDOT uses two different tests. These tests are based on the type of service, as determined by its frequency. For the purposes of the Bus Schedule Adherence Standards, the types of services are defined as follows:

- **Scheduled Departure Service;** A route is considered to provide schedule departure service for any part of the day in which it operates less frequently than one trip every 10 minutes (headway  $\geq 10$  minutes). For schedule departure services, customers generally time their arrival at bus stops to correspond with the specific schedule departure times.
  
- **Walk-Up Service:** A route is considered to provide walk-up service for any part of the day in which it operates more frequently than one bus every 10 minutes (headway  $< 10$  minutes). For walk-up service, customers can arrive at a stop without looking at a schedule and expect only a brief wait. There are two important indicators of on-time performance for walk-up service. One is how evenly spaced the buses are, and the other is how closely the actual duration of the trip approximates the scheduled travel time.

A route might operate entirely with walk-up service, entirely with scheduled departure service, or with a combination of both throughout the day. Because any given route may have both types of service, each trip is measured individually to determine whether it is on-time, according to the type of service that it provides. Therefore, there are two separate trip tests that are applied to the trips on any given route before the whole route can be tested for schedule adherence.

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- **On-Time Test for Scheduled Departure Trips:** To be considered on-time, any trip with a leading headway schedule for 10 minutes or more must meet all the following conditions:
    - The trip must start between 0 minutes before and 3 minutes after its schedule departure time.
    - The trip must leave the route midpoint(s) between 0 minutes before and 7 minutes after its schedule departure time (midpoints are calculated only for routes on which the data is collected using AVL).
    - The trip must arrive at its destination between 3 minutes before and 5 minutes after its scheduled arrival time.
  
  - **On-Time Test for Walk-Up Trips:** To be considered on-time, any trip with a leading headway scheduled for less than 10 minutes must meet all the following conditions:
    - The trip must start within 15% of its scheduled headway (but not necessarily within 15% of its scheduled departure time). For example, if “trip A” is scheduled to start at 7:30 AM and the route’s next trip, “trip B” is scheduled to start at 7:38 AM, “trip B” has a 5-minute scheduled headway. Therefore, “trip B” must start 3 to 6 minutes after “trip A” and is actually starts to be considered on-time.
    - The trip must leave the midpoint (s) within 30% of its scheduled headway (midpoints are calculated only for routes on which the data is collected using AVL). Continuing the above example, if “trip B” is scheduled to leave a midpoint to be 5 minutes after “trip A” is scheduled to leave it, then “trip B” must leave the midpoint 3 to 6 minutes after “trip A”’s time, and must be 24 to 36 minutes to be considered on-time.
1. **Bus Route Test:** The second part of the Bus Schedule Adherence Standard determines whether or not a route is on-time, based on the proportion of trips on

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the route that are on-time over the entire service day (regardless of which types of trips they are).

- **On-Time Test for a Bus Route:** For a Bus Route to be considered on-time, 85% of all trips on the route (in both directions) over the entire service day must **pass their trip on-time test.**

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**XI. GLOSSARY OF TERMS**

**Articulated Bus:** A bus 60 feet long, built in two sections joined together by an accordion-like bellows for maneuverability. These buses have 63 – 72 seats and are used in both local and commuter service.

**Block:** A series of trips conducted by one bus. (It may be either in the morning, midday, evening, or night time periods.)

**Circulator Route:** A local route that operates within a small geographic area and provides service to a secondary destination.

**Commuter Service:** Bus service that travels directly to a central activity center with single or limited passenger pick-up locations. There are two primary types of commuter service offered: Park & Ride and Express Services.

**Cross-town Route:** A local route that does not go to or through a Central Activity Center, such as the Central Business District (CBD).

**Deadhead:** The miles or hours when a bus is being driven to its first scheduled time point or returning to the garage from its last scheduled time point. Additionally, deadheads include travel to other points to begin a route when no passenger service is provided.

**Express Route:** Commuter Service that picks up passengers along a route for a limited distance and then operates without stops for the rest of the trip to the destination area.

**40-Foot Bus:** A bus-used in Transit Service with 38 – 50 seats.

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**Frequency:** How many buses pass by a point in a given time period.

**Headway:** The time between buses in the schedule moving in the same direction along a route. Five minutes would be a very short headway; 60 minutes would be a long headway.

**High-Floor Bus:** A bus 40-45 feet long that contains space under the floor for luggage or other items.

**Hooked Routes:** Two routes that generally serve different areas of the city, but are connected to operate as one route in order to save equipment, reduce duplicative service; also called "In Service Interlining".

**HOV Lane:** High-Occupancy Vehicle - A restricted or barrier separated road for buses and for cars with more than one occupant that provides faster trips than freeway main lanes and that has limited access points (may not be barrier- separated in some cities).

**Layover:** Time built into a schedule to allow a break for the operator and to allow "catch-up" time if traffic conditions cause service delays.

**Local Route:** Bus service that picks up and discharges passengers all along the route. There are several types of local routes: radial, limited, feeder, cross-town, circulator and shuttle service.

**Low-Floor Bus:** A bus with the floor closer to the ground than a standard bus. No wheelchair lift is required (a flip-out ramp is usually deployed). It is not necessary for passengers to climb steps in order to board a low-floor bus.

**Minibus:** A bus under 30-feet long with 25-30 seats.

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**MPO:** Metropolitan Planning Organization.

**Net Cost/Passenger:** Reflects the benefit of a given service (measured in customers) against the public cost of operating the service. Net Cost/Passenger is the Service Standard that is used to measure progress toward achieving the Cost-Effectiveness Service Objective.

**Park & Ride Route:** Commuter service that operates from a single or minimal number of pick-up points and travels directly to the activity center with no interim stops.

**Park & Ride Lot:** A facility comprised of parking and passenger boarding areas with a covered shelter and other amenities where commuters can park their cars and catch the bus to work.

**Passenger Boardings:** The number of times a passenger gets on any bus in the system; also called “Unlinked Trips”.

**Passenger Trips:** The number of “journeys” made by all passengers in a given time period. A passengers transferring to a second bus to complete his trip would count as two boardings but only one trip; also called “Linked Trips”.

**Peak Direction:** The direction in which most commuters are traveling on a route during the peak period (e.g., toward downtown Detroit in the morning and away from downtown Detroit downtown in the afternoon).

**Radial Route:** A local route that serves a central location, i.e. downtown, in a pattern that resembles the spokes of a wheel.

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**Revenue Service:** The miles or hours operated by a bus when it is scheduled to be picking up or discharging passengers.

**Run Cut:** The process of setting up the operator's work assignment for all the service that will be provided at the next service change.

**Run:** A bus operator's daily assignment. It may be eight hours straight or it may comprise two or more pieces of work on different routes.

**Running Time:** The time allowed on the schedule between two points.

**Schedule Adherence:** An indicator of on-time performance, or how reliable services adhere to the published schedules. Schedule Adherence is the Service Standard that is used to measure progress toward achieving the Reliability Service Objective.

**Service Evaluation Process:** Through the Service Evaluation Process, data collected on DDOT services are compared against the Service Standards to determine whether or not individual existing service perform at acceptable levels and to evaluate the potential of possible service changes. The Service Evaluation Process also uses the Service standards to compare the performance of existing services, with those of proposed service and/or possible new services, to prioritize the allocation of resources within the system.

**Service Objectives:** To evaluate progress toward achieving its mission, DDOT has identified five Service Objectives that DDOT believes represent the most important characteristics of high quality service: 1) Reliable-Service should be operated as scheduled; 2) Customer-Focused: Services should offer a pleasant and comfortable riding environment; 3) Safe-Services should be provided in a safe manner; 4) Secure for all users: services should be geographically available through the community and should be operated at convenient times, providing ridership comfort and reliable



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frequencies, and 5) Fiscally Responsible Services should be tailored to target markets in a financially sound and cost-effective manner.

**Service Plan:** Through preparation of a five year and a triennial Service Plan, DDOT ensures that DDOT uses available funds in the most effective manner by evaluating the performance of existing services against the Service Standards. Based on this analysis, the Service Planning Division proposes new service and/or to relocate service within the system. The Service Planning Process includes on-going service evaluation and modification, as well as preparation on the triennial Service Plan.

**Service Planning Process:** DDOT regularly evaluates the performance of its services through the Service Planning Process. The primary objective of the service planning process is to ensure that DDOT uses available resources in the most effective manner by developing strategies to improve performance and/or to relocate service within the system. The Service Planning Process includes on-going service evaluation and modification, as well as preparation of the Triennial Service Plan.

**Service Standards/Guidelines:** The Service Standards/Guidelines perform two important functions: 1) they establish the minimum or maximum acceptable levels of service that DDOT must provide to achieve the Service Objectives; and 2) they provide a framework for measuring the performance of DDOT service in the Service Evaluation Process.

**Span of Service:** Refers to the hours during which service is accessible and is defined by the times that a service begins in the morning and ends in the evening. Span of Service is one of the Service Standards that is used to measure progress toward achieving the Customer Focused Service Objective.

**Shuttle Route:** A local route that provides service back and forth from one point to another, both of which would be considered secondary destinations.

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**Standard Bus:** A bus that is 35-40 feet long with 39-47 seats. These are used primarily in local service and require a wheelchair lift to meet ADA criteria.

**Time Point:** A location on a route associated with the time that a bus is scheduled to depart from that location as it operates on the route. Selections of these points (not all) are listed on the published public time tables.

**Title VI:** Title VI of the Civil Rights Act of 1964 requires that transit agencies that receive federal funding demonstrate that they do not discriminate in the provision of services on the basis of race, color, or national origin.

**Transit Center:** A facility usually comprised of a passenger boarding area with little or no long-term parking where passengers can transfer from one bus to another in a sheltered environment.

**Trippler:** A work assignment of that includes one or more revenue trips before it returns to the garage or start regular assigned service. DDOT (trippers are runs of less than six (6) hours duration) provides service at a level to meet demand. Since demand on most routes is highest in the a.m. and p.m. peak periods, it is necessary to operate additional equipment in these periods to handle the increased ridership. Most buses go out of service during the midday period when ridership falls to much lower numbers.

**Trolley Bus:** A minibus rubber-wheeled constructed to resemble an old-time trolley.

**Vehicle Load:** the level of passenger crowding that is acceptable for a safe and comfortable ride. Vehicle Load is expressed as a ratio of the number of passengers on the vehicle to the number of seats on the vehicle. Vehicle Load is the Service Standard that is used to measure progress toward achieving the safe and secure for all users service objectives.